

# SERVICE MANUAL

## FE-2 CHASSIS

MODEL	COMMANDER	DEST	CHASSIS NO.	MODEL	COMMANDER	DEST	CHASSIS NO.
<b>KV-21LT1B</b>	RM-887	French	SCC-Q54C-A	<b>KV-21FT2K</b>	RM-887	OIRT	SCC-Q51E-A
<b>KV-21LT1E</b>	RM-887	Spanish	SCC-Q53C-A				
<b>KV-21LT1K</b>	RM-887	OIRT	SCC-Q51C-A				
<b>KV-21LT1U</b>	RM-887	UK	SCC-Q52C-A				

## FD Trinitron



**KV-21LT1**



**RM-887**



**KV-21FT2**

TRINITRON<sup>®</sup> COLOR TV  
**SONY<sup>®</sup>**

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## CAUTION

SHORT CIRCUIT THE ANODE OF THE PICTURE TUBE AND THE ANODE CAP TO THE METAL CHASSIS, CRT SHIELD, OR THE CARBON PAINTED ON THE CRT, AFTER REMOVAL OF THE ANODE CAP.

## WARNING !!

AN ISOLATION TRANSFORMER SHOULD BE USED DURING ANY SERVICE WORK TO AVOID POSSIBLE SHOCK HAZARD DUE TO LIVE CHASSIS, THE CHASSIS OF THIS RECEIVER IS DIRECTLY CONNECTED TO THE POWER LINE.

## SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY SHADING AND MARKED  $\Delta$  ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL FOR SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

## ATTENTION

APRES AVOIR DECONNECTE LE CAP DE L'ANODE, COURT-CIRCUITER L'ANODE DU TUBE CATHODIQUE ET CELUI DE L'ANODE DU CAP AU CHASSIS METALLIQUE DE L'APPAREIL, OU AU COUCHE DE CARBONE PEINTE SUR LE TUBE CATHODIQUE OU AU BLINDAGE DU TUBE CATHODIQUE.

## ATTENTION !!

AFIN D'EVITER TOUT RISQUE D'ELECTROCUTION PROVENANT D'UN CHÂSSIS SOUS TENTION, UN TRANSFORMATEUR D'ISOLEMENT DOIT ETRE UTILISÉ LORS DE TOUT DÉPANNAGE LE CHÂSSIS DE CE RÉCEPTEUR EST DIRECTMENT RACCORDÉ À L'ALIMENTATION SECTEUR.

## ATTENTION AUX COMPOSANTS RELATIFS À LA SÉCURITÉ!!

LES COMPOSANTS IDENTIFIÉS PAR UNE TRAME ET PAR UNE MARQUE  $\Delta$  SUR LES SCHÉMAS DE PRINCIPE, LES VUES EXPLOSÉES ET LES LISTES DE PIÈCES SONT D'UNE IMPORTANCE CRITIQUE POUR LA SÉCURITÉ DU FONCTIONNEMENT, NE LES REMPLACER QUE PAR DES COMPOSANTS SONY DONT LE NUMÉRO DE PIÈCE EST INDIQUÉ DANS LE PRÉSENT MANUEL OU DANS DES SUPPLÉMENTS PUBLIÉS PAR SONY.


ITEM MODEL	Television System	Channel Coverage	Color System
French	B/G/H, L,I	VHF : E2-E12, F2-F10 UHF : E21-E69 CABLE TV : S01-S03, S1-S20, B-Q HYPER : S21-S41 L F02-F10, F21-F69 I UHF : B21-B69	PAL, SECAM NTSC4.43, NTSC3.58 (VIDEO IN)
Spanish	B/G/H	VHF : E2-E12 UHF : E21-E69 CABLE TV : S01-S03, S1-S20 HYPER : S21-S41	PAL, SECAM NTSC4.43, NTSC3.58 (VIDEO IN)
OIRT	B/G/H, D/K	VHF : E2-E12, R01-R12 UHF : E21-E69, R21-R69 CABLE TV : S01-S03, S1-S20 HYPER : S21-S41	PAL, SECAM NTSC4.43, NTSC3.58 (VIDEO IN)
UK	I	I : UHF B21-B69	PAL, SECAM NTSC4.43, NTSC3.58 (VIDEO IN)

Model	KV-21FT2K	KV-21LT1B	KV-21LT1E	KV-21LT1K	KV-21LT1U
Power Consumption	55W	55W	55W	55W	76W

Picture Tube	Flat Display FD Trinitron Approx. 55cm (21 inches) (Approx. 51 cm picture measured diagonally) 110 degree deflection	Sound output	21LT1B/21LT1E/21LT1K/21LT1U: 1x8W (Music Power) 1x4W (RMS Mono)  21FT2K: 2x6W (Music Power) 2x3W (RMS Mono)
Input/Output Terminals [REAR]		Power Requirements	220 - 240V
1: 21-pin Euro connector (CENELEC standard)	Inputs for Audio and Video signals. Inputs for RGB. Outputs of TV Video and Audio signals.	Dimensions	21LT1B/21LT1E/21LT1K/21LT1U: Approx 514x478x487mm  21FT2K: Approx 488x480x477mm
Input/Output Terminals [FRONT]		Weight	21LT1B/21LT1E/21LT1K/21LT1U: Approx 24kg 21FT2K: Approx 26.1kg
Video input	phono jack	Supplied Accessories	RM-887 Remote Commander (1) IEC designated R6 battery (2)
Audio input	phono jack	Other Features	Teletext, Sleep Timer, Smartlink, TV system Autodetection
Headphone jack	stereo mini jack	Remote control system	Infrared control
		Power requirements	3V dc 2 batteries IEC designation R6 (size AA)
Design and specifications are subject to change without notice.			

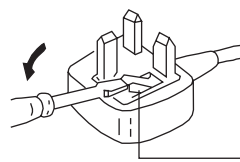
Model Name Item	KV-21FT2K	KV-21LT1B	KV-21LT1E	KV-21LT1K	KV-21LT1U
Pal Comb	OFF	OFF	OFF	OFF	OFF
PIP	OFF	OFF	OFF	OFF	OFF
RGB Priority	OFF	ON	ON	OFF	ON
Woofer Box	OFF	OFF	OFF	OFF	OFF
Scart 1	ON	ON	ON	ON	ON
Scart 2	OFF	OFF	OFF	OFF	OFF
Front in (3)	OFF	OFF	OFF	OFF	OFF
Scart 4	OFF	OFF	OFF	OFF	OFF
Projector	OFF	OFF	OFF	OFF	OFF
AKB in 16:9 mode	OFF	OFF	OFF	OFF	OFF
Norm B/G	ON	ON	ON	ON	OFF
Norm I	OFF	ON	OFF	OFF	ON
Norm D/K	ON	OFF	ON	OFF	OFF
Norm AUS	OFF	OFF	OFF	OFF	OFF
Norm L	OFF	ON	OFF	OFF	OFF
Norm SAT	OFF	OFF	OFF	OFF	OFF
Norm M	OFF	OFF	OFF	OFF	OFF
Teletext	ON	ON	ON	ON	ON
Nicam Stereo	OFF	OFF	OFF	OFF	OFF

## WARNING (UK Models only)

The flexible mains lead is supplied connected to a **B.S. 1363** fused plug having a fuse of **5 AMP** rating. Should the fuse need to be replaced, use a **5 AMP FUSE** approved by ASTA to **BS 1362**, ie one that carries the  mark.

IF THE PLUG SUPPLIED WITH THIS APPLIANCE IS NOT SUITABLE FOR THE OUTLET SOCKETS IN YOUR HOME, IT SHOULD BE CUT OFF AND AN APPROPRIATE PLUG FITTED. THE PLUG SEVERED FROM THE MAINS LEAD MUST BE DESTROYED AS A PLUG WITH BARED WIRES IS DANGEROUS IF ENGAGED IN A LIVE SOCKET.

When an alternative type of plug is used, it should be fitted with a **5 AMP FUSE**, otherwise the circuit should be protected by a **5 AMP FUSE** at the distribution board.

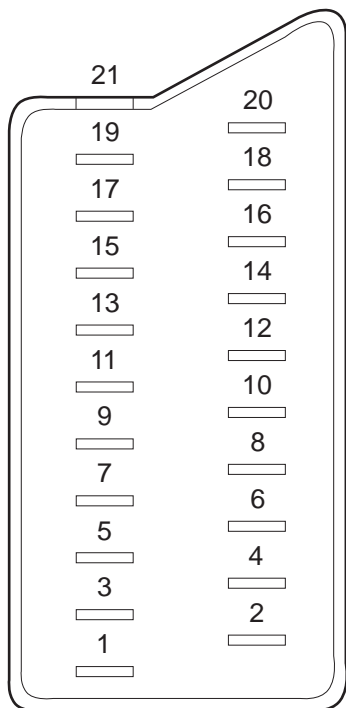


How to replace the fuse.  
Open the fuse compartment with a screwdriver blade and replace the fuse.

FUSE



## 21 pin connector

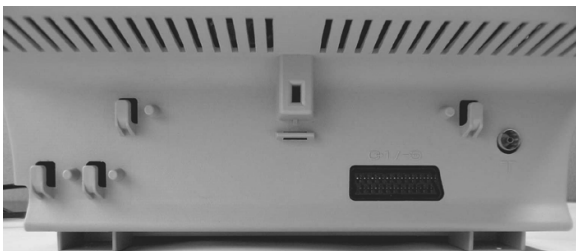


Pin No	1	2	4	Signal	Signal level
1	○	○	○	Audio output B (right)	Standard level : 0.5V rms Output impedance : Less than 1kohm*
2	○	○	○	Audio output B (right)	Standard level : 0.5V rms Output impedance : More than 10kohm*
3	○	○	○	Audio output A (left)	Standard level : 0.5V rms Output impedance : Less than 1kohm*
4	○	○	○	Ground (audio)	
5	○	○	○	Ground (blue)	
6	○	○	○	Audio input A (left)	Standard level : 0.5V rms Output impedance : More than 10kohm*
7	○	●	●	Blue input	0.7 +/- 3dB, 75 ohms positive
8	○	○	○	Function select (AV control)	High state (9.5-12V) : Part mode Low state (0-2V) : TV mode Input impedance : More than 10K ohms Input capacitance : Less than 2nF
9	○	○	○	Ground (green)	
10	○	○	○	Open	
11	○	●	●	Green	Green signal : 0.7 +/- 3dB, 75 ohms, positive
12	○	○	○	Open	
13	○	○	○	Ground (red)	
14	○	○	○	Ground (blanking)	
15	○	-	-	Red input	0.7 +/- 3dB, 75 ohms, positive
	-	○	○	(S signal Chroma input)	0.3 +/- 3dB, 75 ohms, positive
16	○	●	●	Blanking input (Ys signal)	High state (1-3V) Low state (0-0.4V) Input impedance : 75 ohms
17	○	○	○	Ground (video output)	
18	○	○	○	Ground (video input)	
19	○	○	○	Video output	1V +/- 3dB, 75ohms, positive sync 0.3V (-3+10dB)
20	○	-	-	Video input	1V +/- 3dB, 75ohms, positive sync 0.3V (-3+10dB)
	-	○	○	Video input Y (S signal)	1V +/- 3dB, 75ohms, positive sync 0.3V (-3+10dB)
21	○	○	○	Common ground (plug, shield)	

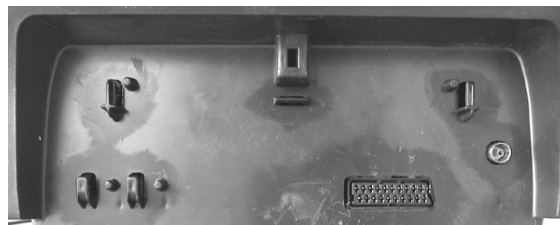
○ Connected      ● Not Connected (open)      \* at 20Hz - 20kHz

## Rear Connection Panel

KV-21LT1



KV-21FT2



## Front Connection Panel

KV-21LT1



KV-21FT2



## FE-2 SELF DIAGNOSTIC SOFTWARE

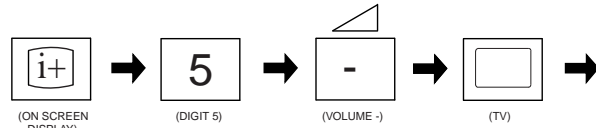
The identification of errors within the FE-2 chassis is triggered in one of two ways :- 1: Busy or 2: Device failure to respond to IIC. In the event of one of these situations arising the software will first try to release the bus if busy (Failure to do so will report with a continuous flashing LED) and then communicate with each device in turn to establish if a device is faulty. If a device is found to be faulty the relevant device number will be displayed through the LED (Series of flashes which must be counted) See table 1., non fatal errors are reported using this method. Each time the software detects an error it is stored within the NVM. See Table 2.

Table 1

Error Message	LED Code
No error	00
Reserved	01
OCP ( Over Current Protection )	02
Reserved	03
No Vertical Sync	04
Unstable AKB	05
IIC bus clock and/or data lines low at power on	06
NVM no IIC bus acknowledge at power on	07
Not Used	08
Tuner no acknowledge at power on	09
Not used	10
Jungle controller no acknowledge at Power ON	11

How to enter into Table 2

1. Turn on the main power switch of the TV set and enter into the 'Standby Mode'.
2. Press the following sequence of buttons on the Remote Commander.



3. The following table will be displayed indicating the error count.

### Flash Timing Example : e.g. error number 3

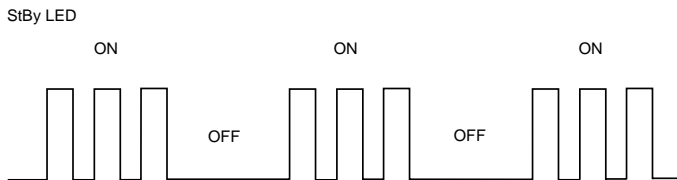



Table 2

ERROR MENU			
E02	OCP	(0, 255)	0
E03	OVP N/A	(0, 255)	0
E04	VSUNC	(0, 255)	0
E05	IKR	(0, 255)	0
E06	IIC	(0, 255)	0
E07	NVM	(0, 255)	0
E08	JUNGLE	(0, 255)	0
E09	TUNER	(0, 255)	0
E10	SOUNDP	(0, 255)	0
E11	8V	(0, 255)	0
WORKING			
TIME			
HOURS			0
MINUTES			0

**Note:** To clear the error count data press '80' on the Remote commander.

The operating instructions mentioned here are partial abstracts from the 'Operating Instruction Manual'. The page numbers of the 'Operating Instruction Manual' remain as in the manual.

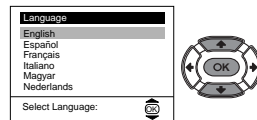
## Switching On the TV and Automatically Tuning

- 1** The first time you switch on your TV, a sequence of menu screen appear on the TV enabling you to: 1) choose the language of the menu screen, 2) choose the country in which you wish to operate the TV, 3) search and store all available channels (TV Broadcast) and 4) change the order in which the channels (TV Broadcast) appear on the screen. However, if you need to change the language menu, change or repeat the tuning (e.g. when you move house) or rearrange again the order of the channels afterwards, you can do that by selecting the appropriate menu in the **Set Up** (Set Up). For more information, refer to the "Menu Guide" section of this instruction manual. You can also do that by pressing the Auto Start Up Button  on the TV set.

- 1** Connect the TV plug to the mains socket (220-240V AC, 50Hz). Press the **On/off** button on the TV set to turn on the TV. The first time you press this button, a **Language** menu displays automatically on the TV screen.



- 2** Press the **Down** or **Up** button on the remote control to select the language, then press the **OK** button to confirm your selection. From now on all the menus will appear in the selected language.

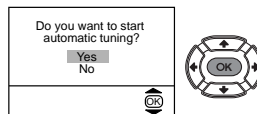


- 3** The **Country** menu appears automatically on the TV screen. Press the **Down** or **Up** button to select the country in which you will operate the TV set, then press the **OK** button to confirm your selection.



- i** Select "-" instead of a country
- If the country in which you want to use the TV set does not appear in the list.
  - If you do not want your channels (TV Broadcast) stored in a given channel sequence starting from programme position 1.

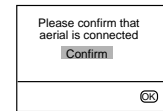
- 4** The **Auto Tuning** menu appears on the screen. Press the **OK** button to select **Yes**.



continued...

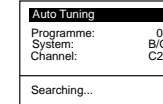
First Time Operation

- 5** A new menu appears on the screen asking you to check that the aerial is connected. Ensure the aerial is connected and then press the **OK** button to start the automatic tuning.

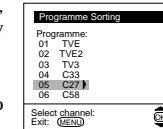


- i** The TV starts to automatically search and store all available channels (TV Broadcast) for you.

- A** This procedure could take some minutes. Please be patient and do not press any button. Otherwise the automatic tuning will not be completed.



- 6** After all available channels are captioned and stored, the **Programme Sorting** menu appears automatically on the screen enabling you to change the order in which the channels appear on the screen.



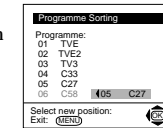
- a)** If you do not wish to change the channel order, go to step 7.

- b)** If you wish to change the channel order:

- 1** Press the **Down** or **Up** button to select the programme number with the channel (TV Broadcast) you wish to rearrange, then press the **Right** button.


- 2** Press the **Down** or **Up** button to select the new programme number position for your selected channel (TV Broadcast), then press **Left**.

- 3** Repeat steps b)1 and b)2 if you wish to change the order of the other channels.



- 7** Press the **MENU** button to remove the menu from the screen.



 Your TV is now ready for use

First Time Operation

## Introducing and Using the Menu System

**i** Your TV uses an on-screen menu system to guide you through the operations. Use the following buttons on the Remote Control to operate the menu system:

**1** Press the **MENU** button to switch the first level menu on.



**2** • To highlight the desired menu or option, press **↓** or **↑**.

• To enter to the selected menu or option, press **↵**.

• To return to the last menu or option, press **←**.

• To alter settings of your selected option, press **↵** / **↑** / **↓** or **↵**.

• To confirm and store your selection, press **OK**.



**3** Press the **MENU** button to remove the menu from the screen.



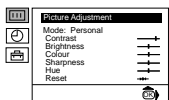
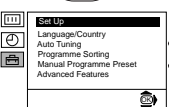
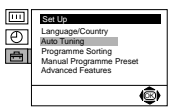
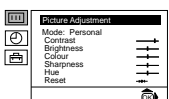
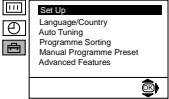
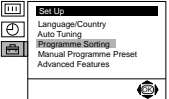
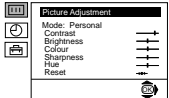
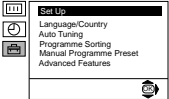
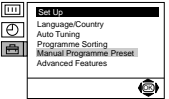
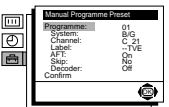
## Menu Guide

Level 1	Level 2	Level 3 / Function
<div>Picture Adjustment</div> <div>Mode: Personal</div> <div>Contrast</div> <div>Brightness</div> <div>Colour</div> <div>Sharpness</div> <div>Hue</div> <div>Reset</div>	<div>Picture Adjustment</div> <div>Mode: Personal</div> <div>Contrast</div> <div>Brightness</div> <div>Colour</div> <div>Sharpness</div> <div>Hue</div> <div>Reset</div>	<p><b>PICTURE ADJUSTMENT</b> The "Picture Adjustment" menu allows you to alter the picture adjustments.</p> <p>To do that: after selecting the item you want to alter press <b>↵</b>, then press repeatedly <b>↓</b> / <b>↑</b> / <b>←</b> or <b>→</b> to adjust it and finally press <b>OK</b> to store the new adjustment.</p> <p>This menu also allows you to customise the picture mode based on the programme you are watching:</p> <ul style="list-style-type: none"> <li>↵ <b>Personal</b> (for individual settings).</li> <li>↵ <b>Live</b> (for live broadcast programmes).</li> <li>↵ <b>Movie</b> (for films).</li> </ul> <ul style="list-style-type: none"> <li>• <b>Brightness, Colour and Sharpness</b> can only be altered if "Personal" mode is selected.</li> <li>• <b>Hue</b> is only available for NTSC colour signal (e.g: USA video tapes).</li> <li>• Select <b>Reset</b> and press <b>OK</b> to reset the picture to the factory preset levels.</li> </ul>

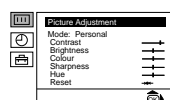
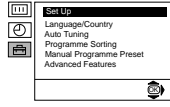
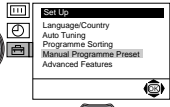
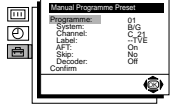
continued...

Level 1	Level 2	Level 3 / Function
<div>Timer</div> <div>Sleep Timer: Off</div> <div>On Timer: Off</div>	<div>Timer</div> <div>Sleep Timer: Off</div> <div>On Timer: Off</div>	<p><b>SLEEP TIMER</b> The "Sleep Timer" option in the "Timer" menu allows you to select a time period for the TV to switch itself automatically into the standby mode.</p> <p>To do that: after selecting the option press <b>↵</b>, then press <b>↓</b> or <b>↑</b> to set the time period delay (max. of 4 hours) and finally press <b>OK</b> to store.</p> <ul style="list-style-type: none"> <li>• While watching the TV, you can press the <b>⏻</b> button on the remote control to display the time remaining.</li> <li>• One minute before the TV switches itself into standby mode, the time remaining is displayed on the TV screen automatically.</li> </ul>
<div>Picture Adjustment</div> <div>Mode: Personal</div> <div>Contrast</div> <div>Brightness</div> <div>Colour</div> <div>Sharpness</div> <div>Hue</div> <div>Reset</div>	<div>Picture Adjustment</div> <div>Mode: Personal</div> <div>Contrast</div> <div>Brightness</div> <div>Colour</div> <div>Sharpness</div> <div>Hue</div> <div>Reset</div>	<p><b>ON TIMER</b> The "On Timer" option in the "Timer" menu allows you to select a time period for the TV to switch itself automatically on from standby mode.</p> <p>To do that: after selecting the option press <b>↵</b>, then press <b>↓</b> or <b>↑</b> to set the time period delay (max. 12 hours) and press <b>OK</b> to store. Finally press the standby button <b> /⏻</b> on the remote control. After the selected length of time the TV switches on automatically.</p> <ul style="list-style-type: none"> <li>• The standby indicator <b>⏻</b> on the TV set flashes regularly to indicate that "On Timer" is active.</li> <li>• Any loss of power will cause these settings to be cleared.</li> </ul>
<div>Set Up</div> <div>Language/Country</div> <div>Auto Tuning</div> <div>Programme Sorting</div> <div>Manual Programme Preset</div> <div>Advanced Features</div>	<div>Set Up</div> <div>Language/Country</div> <div>Auto Tuning</div> <div>Programme Sorting</div> <div>Manual Programme Preset</div> <div>Advanced Features</div>	<p><b>LANGUAGE / COUNTRY</b> The "Language/Country" option in the "Set Up" menu allows you to select the language that the menus are displayed in. It also allows you to select the country in which you wish to operate the TV set.</p> <p>To do that: after selecting the option, press <b>↵</b> and then proceed in the same way as in the steps 2 and 3 of the section "Switching On the TV and Automatically Tuning".</p>

continued...

Level 1	Level 2	Level 3 / Function
		<b>AUTO TUNING</b> The "Auto Tuning" option in the "Set Up" menu allows you to automatically search for and store all available TV channels.
		To do that: after selecting the option, press <b>➡</b> and then proceed in the same way as in TV steps 4 and 5 of the section "Switching On the TV and Automatically Tuning".
		<b>PROGRAMME SORTING</b> The "Programme Sorting" option in the "Set Up" menu allows you to change the order in which the channels (TV Broadcast) appear on the screen.
		To do that: after selecting the option, press <b>➡</b> and then proceed in the same way as in step 6 b) of the section "Switching On the TV and Automatically Tuning".
		<b>MANUAL PROGRAMME PRESET</b> The "Manual Programme Preset" option in the "Set Up" menu allows you to:
		<b>a)</b> Preset channels or a video input source one by one to the programme order of your choice. To do that:
		<b>1</b> After selecting the "Manual Programme Preset" option, press <b>➡</b> then with <b>Programme</b> option highlighted press <b>➡</b> . Press <b>➡</b> or <b>⬅</b> to select on which programme number you want to preset the channel (for VCR, select programme number "0"). Then press <b>⬅</b> .
		<b>2</b> After selecting the <b>System</b> option, press <b>➡</b> . Then press <b>➡</b> or <b>⬅</b> to select the TV Broadcast system (B/G for western European countries or D/K for eastern European countries). Then press <b>⬅</b> .

continued...

Level 1	Level 2	Level 3 / Function
		<b>3</b> After selecting the <b>Channel</b> option, press <b>➡</b> . Then press <b>➡</b> or <b>⬅</b> to select the channel tuning ("C" for terrestrial channels or "S" for cable channels). Next press <b>➡</b> . After that, press the number buttons to enter directly the channel number of the TV Broadcast or the channel of the VCR signal. If you do not know the channel number, press <b>➡</b> or <b>⬅</b> to search for it. When you tune the desired channel, press <b>OK</b> twice to store.
		<i>Repeat all the above steps to tune and store more channels.</i>
		<b>b)</b> Normally the automatic fine tuning (AFT) is operating, however you can manually fine tune the TV to obtain a better picture reception in the case that the picture is distorted.
		To do that: while watching the channel (TV Broadcast) you wish to fine tune, select the <b>AFT</b> option and press <b>➡</b> . Next press <b>➡</b> or <b>⬅</b> to adjust the fine tuning between -15 and +15. Finally press <b>OK</b> twice to store.
		<b>c)</b> Skip any unwanted programme numbers when they are selected with the <b>PROGR +/-</b> buttons.
		To do that: Highlighting the <b>Programme</b> option, press the <b>PROGR +/-</b> button to select the programme number you want to skip. When the programme you want to skip appears on the screen, select the <b>Skip</b> option and press <b>➡</b> . Next press <b>➡</b> or <b>⬅</b> to select <b>Yes</b> . Finally press <b>OK</b> twice to confirm and store.
		<i>To cancel this function afterwards, select "No" instead of "Yes" in the step above.</i>
		<b>d)</b> Label a channel using up to five characters.
		To do that: Highlighting the <b>Programme</b> option, press the <b>PROGR +/-</b> button to select the programme number with the channel you wish to name. When the programme you want to name appears on the screen, select the <b>Label</b> option and press <b>➡</b> . Next press <b>➡</b> or <b>⬅</b> to select a letter, number or "-" for a blank. Press <b>➡</b> to confirm this character. Select the other four characters in the same way. After selecting all the characters, press <b>OK</b> twice to store.

continued...

## Teletext

**i** Teletext is an information service transmitted by most TV stations. The index page of the teletext service (usually page 100) gives you information on how to use the service. To operate teletext, use the remote control buttons as indicated below.

**A** Make sure to use a channel (TV Broadcast) with a strong signal, otherwise teletext errors may occur.

### To Switch On Teletext :

After select the channel (TV Broadcast) which carries the teletext you wish to view, press **⏏**.

### To Select a Teletext page:

Input 3 digits for the page number, using the numbered buttons.

- If you have made a mistake, retype the correct page number.
- If the counter on the screen continues searching, it is because this page is not available. In that case, input another page number



### To access the next or preceding page:

Press **PROGR** + (**⏏**) or **PROGR** - (**⏏**).

### To superimpose teletext on to the TV:

Whilst you are viewing teletext, press **⏏**. Press it again to cancel teletext mode.

### To freeze a teletext page:

Some teletext pages have sub-pages which follow on automatically. To stop them, press **⏏** / **⏏**. Press it again to cancel the freeze.

### To reveal concealed information (e.g: answer to a quiz):

Press **⏏** / **⏏**. Press it again to conceal the information.

### To Switch Off Teletext:

Press **⏏**.

## Fastext

**i** Fastext service lets you access pages with one button push.

While you are in Teletext mode and Fastext is broadcast, a colour coded menu appears at the bottom of the teletext page. Press the colour button (red, green, yellow or blue) to access the corresponding page.

GB

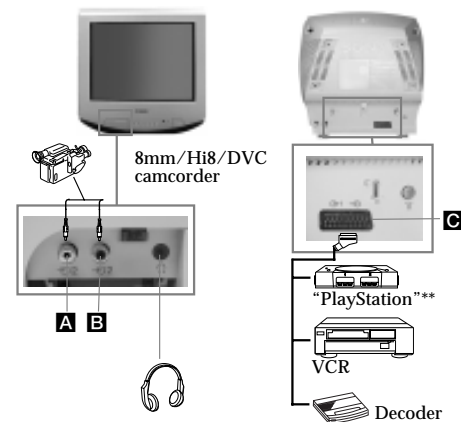
## Connecting Optional Equipment

**i** Using the following instructions, you can connect a wide range of optional equipment to your TV set. (Connecting cables are not supplied).

### Connecting a VCR:

To connect a VCR, please refer to the section "Connecting the aerial and VCR" of this instruction manual. We recommend you connect your VCR using a scart lead. If you do not have a scart lead, tune in the VCR test signal to TV programme number "0", by using "Manual Programme Preset" option. (for details how to manual programme, see page 11, step a).

Also refer to your VCR instruction manual to find out how to find the output channel of your VCR.



### If you have connected a decoder to a VCR which supports Smartlink feature:

Select the "Manual Programme Preset" option in the "Set Up" menu and after entering in the "Decoder\*" option, select "On" (by using **⏏** or **⏏**) to each scrambled channel.

\*This option is only available depending the country you have selected in the "Country" menu.

\*\* "PlayStation" is a product of Sony Computer Entertainment, Inc.

\*\* "PlayStation" is a trademark of Sony Computer Entertainment, Inc.

## Using Optional Equipment

- 1 Connect your equipment to the designated TV socket, as indicated above.
- 2 To watch the picture of the connected equipment, press the **⏏** button repeatedly until the correct input symbol appears on the screen.

Symbol	Input Signals
<b>⏏</b> 1	• Audio / video input signal through the Scart connector <b>C</b>
<b>⏏</b>	• RGB input signal through the Scart connector <b>C</b> . This symbol appears only if a RGB source has been connected.
<b>⏏</b> 2	• Video input signal through the phono socket <b>A</b> and Audio input signal through <b>B</b> .

- 3 Switch on the connected equipment.
- 4 Press **⏏** button on the remote control to return to the normal TV picture.

## Troubleshooting



Here are some simple solutions to the problems which may affect the picture and sound.

Problem	Solution
No picture (screen is dark) and no sound.	<ul style="list-style-type: none"><li>• Check the aerial connection.</li><li>• Plug the TV in and press the  button on the front of TV.</li><li>• If the standby indicator  is on, press  button on the remote control.</li></ul>
Poor or no picture (screen is dark), but good sound.	<ul style="list-style-type: none"><li>• Using the menu system, select the "Picture Adjustment" menu and select "Reset" to return to the factory settings.</li></ul>
No picture or no menu information from the equipment connected to the Scart connector.	<ul style="list-style-type: none"><li>• Check that the optional equipment is on and press the  button repeatedly on the remote control until the correct input symbol is displayed on the screen.</li></ul>
Good picture, no sound.	<ul style="list-style-type: none"><li>• Press the  +/- button on the remote control.</li></ul>
No colour on colour programmes.	<ul style="list-style-type: none"><li>• Using the menu system, select the "Picture Adjustment" menu and select "Reset" to return to factory settings.</li></ul>
Distorted picture when changing programmes or selecting teletext.	<ul style="list-style-type: none"><li>• Turn off any equipment connected to the Scart connector on the rear of the TV.</li></ul>
Picture slanted (only for KV-21LT1K)	<ul style="list-style-type: none"><li>• Using the menu system, select the "Picture Rotation" option in the "Advanced Features" menu to correct the picture slant.</li></ul>
Noisy picture when viewing a TV channel.	<ul style="list-style-type: none"><li>• Using the menu system, select the "Manual Programme Preset" menu and adjust Fine Tuning (AFT) to obtain better picture reception.</li><li>• Using the menu system, select the "Noise Reduction" option in the "Advanced Features" menu and select "On" to reduce the noise in the picture.</li></ul>
Remote control does not function.	<ul style="list-style-type: none"><li>• Replace the batteries.</li></ul>
The standby indicator  on the TV flashes even though the "On Timer"	<ul style="list-style-type: none"><li>• Contact to your nearest Sony service centre.</li></ul>



In case of problems, have your TV serviced by qualified personnel. Never open the casing yourself.

## SECTION 2 DISASSEMBLY

### KV-21LT1

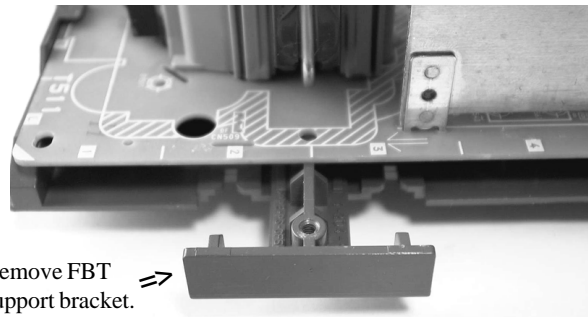
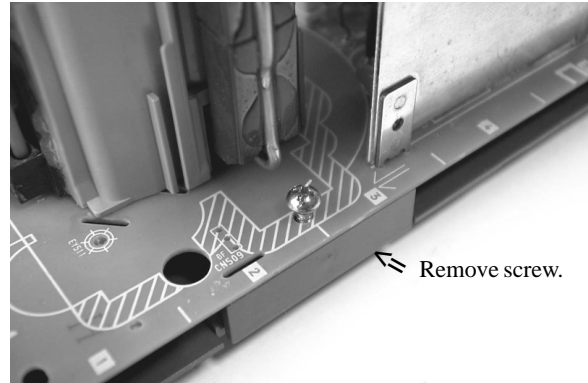
#### 2-1. Rear Cover Removal



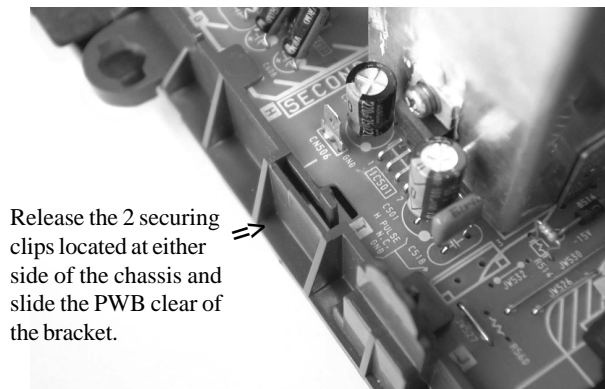
Release the mains power cable from its securing posts. Remove the rear cover fixing screws indicated. Pull the rear cover away from the front beznet until clear of chassis.

**Note :** Use a cross-head screwdriver with a blade length of at least 200mm.

#### 2-2. A Board PWB Removal [ Step 1 ]



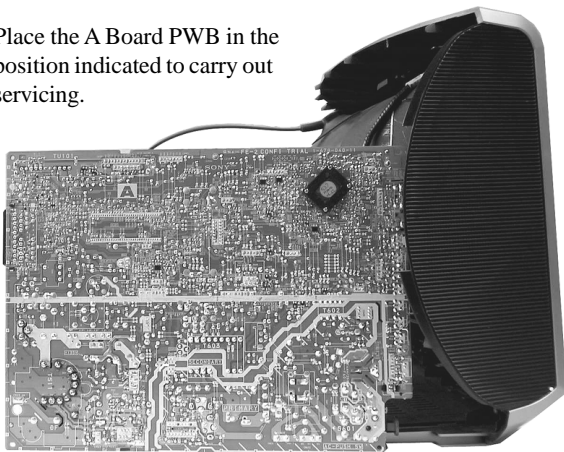
#### 2-3. A Board PWB Removal [ Step 2 ]



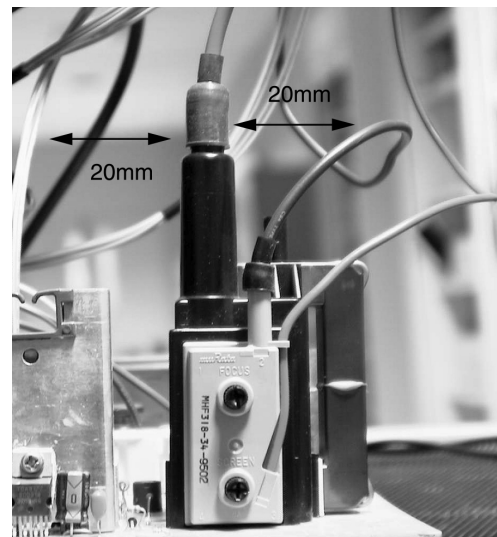
Release the 2 securing clips located at either side of the chassis and slide the PWB clear of the bracket.

#### 2-4. Service Position

Place the A Board PWB in the position indicated to carry out servicing.



#### 2-5. Wire Dressing



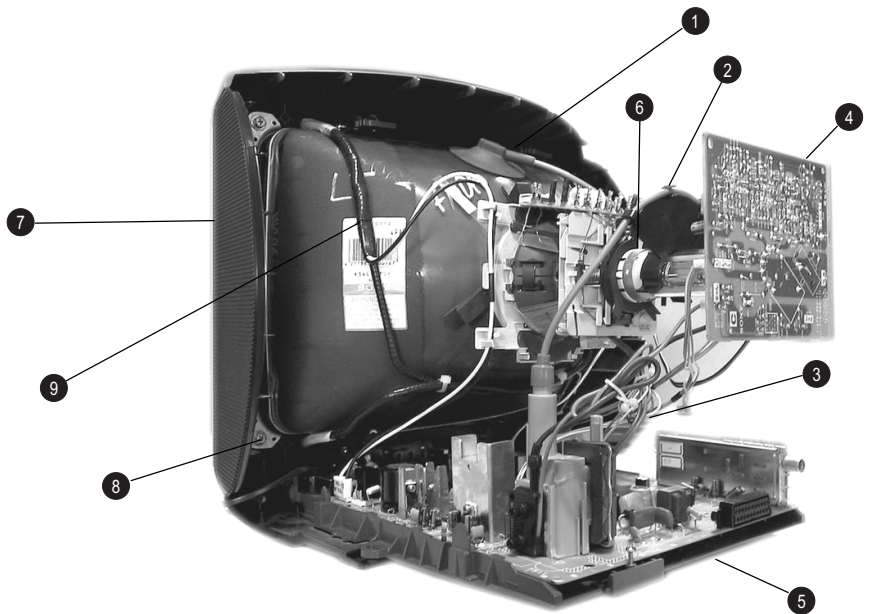
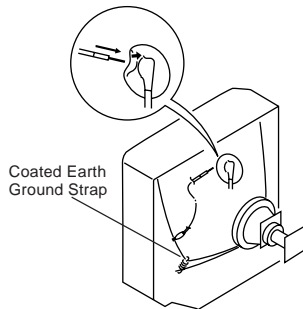
Ensure that all wires do not touch heat-sinks and high temperature hot spots. All wires must be kept at a minimum distance of 20mm away from the EHT lead.



## 2-6. Picture Tube Removal

### WARNING: BEFORE REMOVING THE ANODE CAP

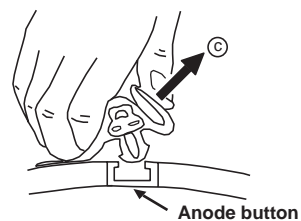
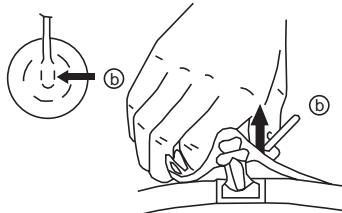
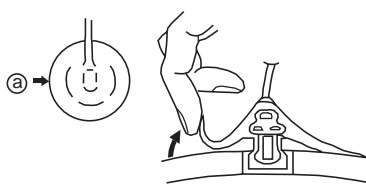
High voltage remains in the CRT even after the power is disconnected. To avoid electric shock, discharge CRT **before** attempting to remove the anode cap. Short between anode and CRT coated earth ground strap.



1. Discharge the anode of the CRT and remove the anode cap.
2. Release the EHT lead from its CRT support bracket.
3. Unplug all interconnecting leads from the Deflection yoke, degaussing coils and CRT grounding strap.
4. Remove the C Board from the CRT.
5. Remove the chassis assembly.
6. Loosen the Deflection yoke fixing screw and remove.
7. Place the set with the CRT face down on a cushion.
8. Unscrew the four CRT fixing screws [ located on each CRT corner ] and remove the CRT.
9. Remove the Degaussing Coils.  
Remove the CRT grounding strap and spring tensioners.  
[Take care not to handle the CRT by the neck.]

## Removal of the Anode-Cap

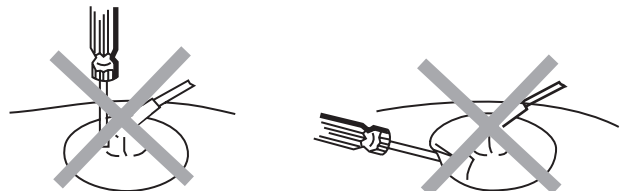
### \* REMOVING PROCEDURES.



- ① Turn up one side of the rubber cap in the direction indicated by the arrow (a)
- ② Using a thumb pull up the rubber cap firmly in the direction indicated by the arrow (b)
- ③ When one side of the rubber cap is separated from the anode button, the anode-cap can be removed by turning up the rubber cap and pulling it up in the direction of the arrow (c)

### How to handle the Anode-Cap

1. To prevent damaging the surface of the anode-cap do not use sharp materials.
2. Do not apply too great a pressure on the rubber, as this may cause damage to the anode connector.
3. A metal fitting called a shatter hook terminal is fitted inside the rubber cap.
4. Do not turn the rubber foot over excessively, this may cause damage if the shatter hook sticks out.

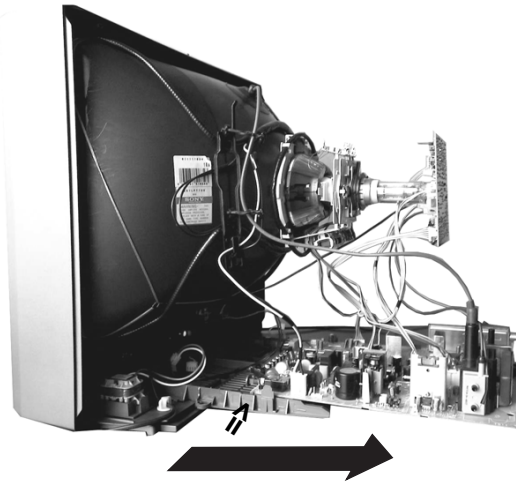


### 2-7. Rear Cover Removal



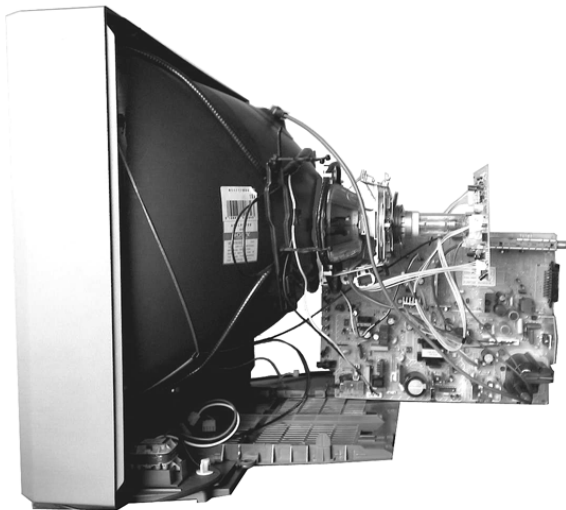
Remove the rear cover fixing screws indicated. Pull the rear cover straight back until clear of chassis.

### 2-8. Chassis Removal and Refitting



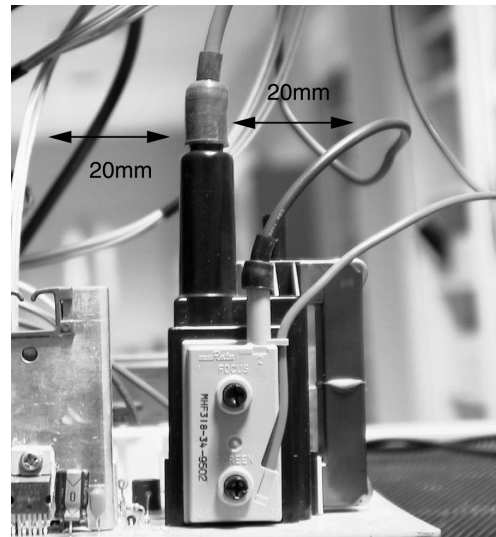
To remove the chassis release the clips indicated at opposite sides of the main bracket and slide the chassis away from the bezel. Ensure that the interconnecting leads are released from their purse locks to prevent damage being caused.

### 2-9. Service Position



Position the A board as shown to gain access to its solder side. Take care not to trap the interconnecting leads in the process.

### 2-10. Wire Dressing

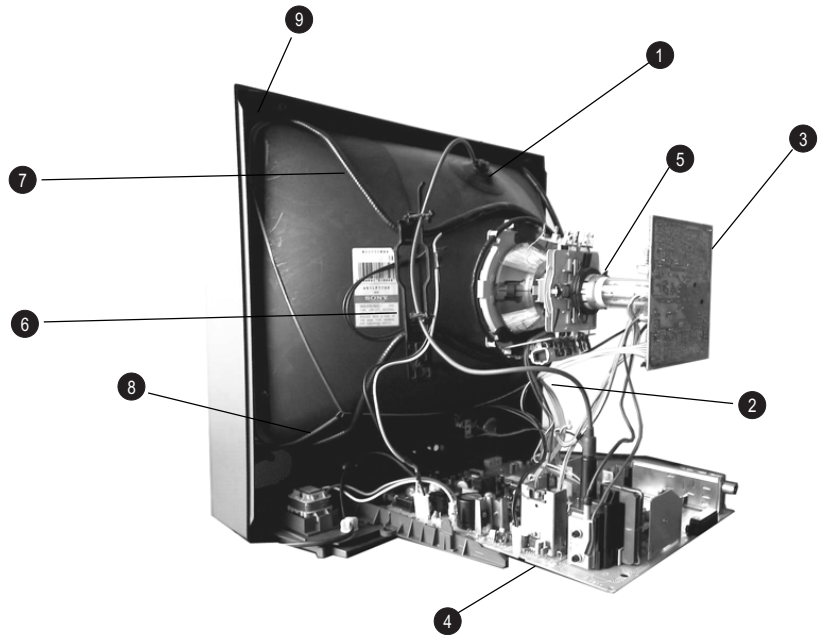
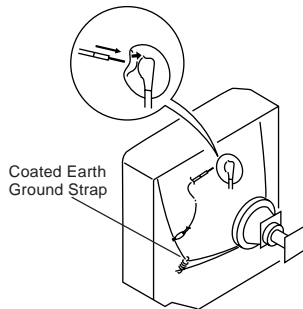


Ensure that all wires do not touch heat-sinks and high temperature hot spots. All wires must be kept at a minimum distance of 20mm away from the EHT lead.

## 2-11. Picture Tube Removal

### WARNING: BEFORE REMOVING THE ANODE CAP

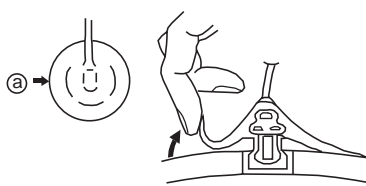
High voltage remains in the CRT even after the power is disconnected. To avoid electric shock, discharge CRT **before** attempting to remove the anode cap. Short between anode and CRT coated earth ground strap.



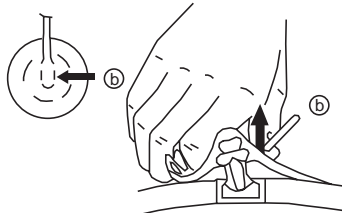
1. Discharge the anode of the CRT and remove the anode cap.
2. Unplug all interconnecting leads from the Deflection yoke, neck assy, degaussing coils and CRT grounding strap.
3. Remove the C Board from the CRT.
4. Remove the chassis assembly.
5. Loosen the Deflection yoke fixing screw and remove.
6. Place the set with the CRT face down on a cushion and remove the Degaussing Coil holders.
7. Remove the Degaussing Coils.
8. Remove the CRT grounding strap and spring tentioners.
9. Unscrew the four CRT fixing screws [ located on each CRT corner ] and remove the CRT.  
[Take care not to handle the CRT by the neck.]

### Removal of the Anode-Cap

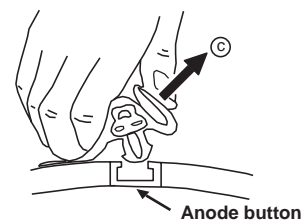
#### \* REMOVING PROCEDURES.



- ① Turn up one side of the rubber cap in the direction indicated by the arrow (a)



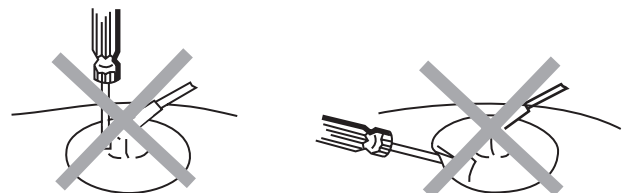
- ② Using a thumb pull up the rubber cap firmly in the direction indicated by the arrow (b)



- ③ When one side of the rubber cap is separated from the anode button, the anode-cap can be removed by turning up the rubber cap and pulling it up in the direction of the arrow (c)

#### How to handle the Anode-Cap

1. To prevent damaging the surface of the anode-cap do not use sharp materials.
2. Do not apply too great a pressure on the rubber, as this may cause damage to the anode connector.
3. A metal fitting called a shatter hook terminal is fitted inside the rubber cap.
4. Do not turn the rubber foot over excessively, this may cause damage if the shatter hook sticks out.



## SECTION 3 SET-UP ADJUSTMENTS

- When complete readjustment is necessary or a new picture tube is installed, carry out the following adjustments.
- Unless there are specific instructions to the contrary, carry out these adjustments with the rated power supply.
- Unless there are specific instructions to the contrary, set the controls and switches to the following settings :

Contrast ..... 80% [or remote control normal]

Brightness ..... 50%

**Carry out the adjustments in the following order :**

- 3-1. Beam Landing.
- 3-2. Convergence.
- 3-3. Focus.
- 3-4. White Balance.

**Note :** Test equipment required.

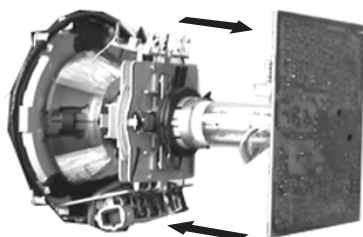
1. Color bar/pattern generator.
2. Degausser.
3. Oscilloscope.
4. Digital multimeter.

### Preparation:

1. In order to reduce the influence of geomagnetism on the set's picture tube, face it in an easterly or westerly direction.
2. Switch on the set's power and degauss with the degausser.

### 3-1. Beam Landing

1. Input an all white signal from the pattern generator. Set the Contrast and Brightness to normal.
2. Set the pattern generator raster signal to Red.
3. Move the deflection yoke forward and adjust with the purity control so that the Red is at the centre and the Blue and Green take up equally sized areas on each side of the screen. [See Fig.3-1 - 3-3].
4. Move the deflection yoke backwards and adjust so that the entire screen becomes Red. [See Fig.3-1]
5. Switch the raster signal to Blue, then to Green and verify the condition.
6. When the position of the deflection yoke has been determined, fasten the deflection yoke with the screws.
7. If the beam does not land correctly in all the corners, use a magnet to correct it. [See Fig.3-4]

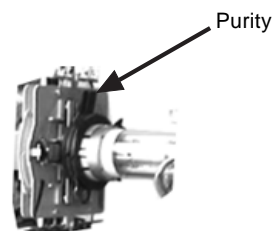


**Fig. 3-1.**

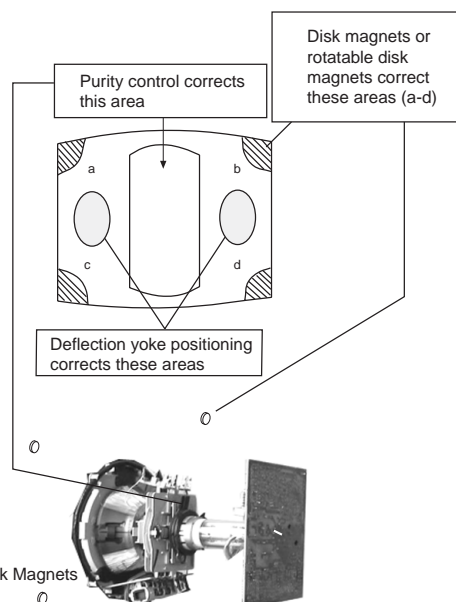
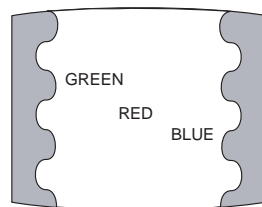
### Caution :

High voltages are present on the Deflection yoke terminals - take care when handling the Deflection yoke whilst carrying out adjustments.

**Fig. 3-2.**



**Fig. 3-3.**



**Fig.3-4**

### 3-2. Convergence

#### Preparation:

- Before starting this adjustment, adjust the focus, horizontal size and vertical size.
- Minimize the Brightness setting.
- Input a dot pattern from the pattern generator.

#### Horizontal and Vertical Static Convergence

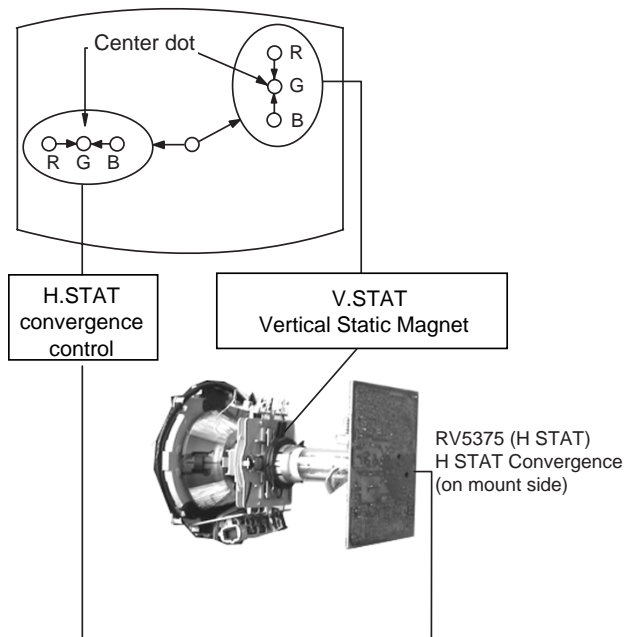
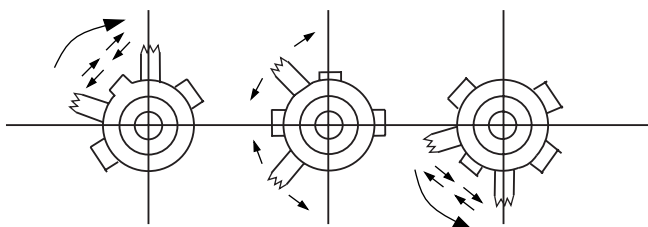


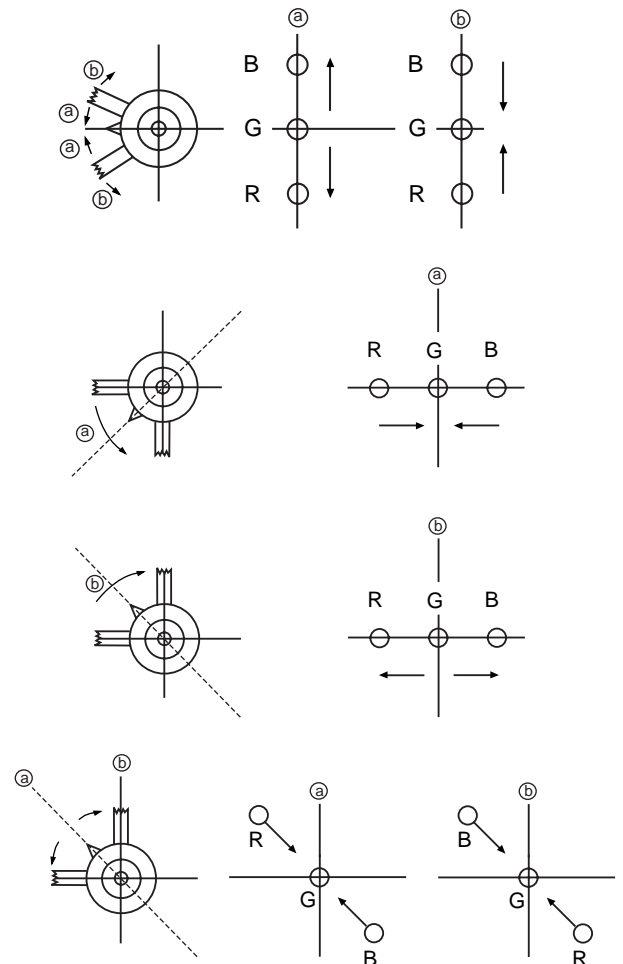
Fig.3-5

1. [Moving horizontally], adjust the H-STAT control so that the Red, Green and Blue points are on top of each other at the centre of the screen.
2. [Moving vertically], adjust the V-STAT magnet so that the Red, Green and Blue points are on top of each other at the centre of the screen.
3. If the H-STAT variable resistor is unable to bring the Red, Green and Blue points together at the centre of the screen, adjust the horizontal convergence with the H-STAT variable resistor and the V-STAT magnet in the manner indicated below.  
[In this case, the H-STAT variable resistor and the V-STAT magnet influence each other].

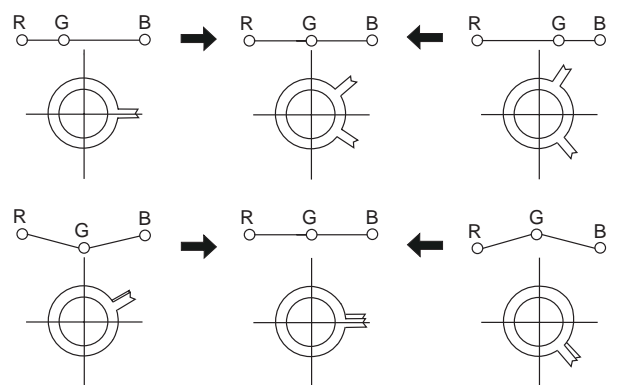
- Tilt the V-STAT magnet and adjust the static convergence by opening or closing the V-STAT magnet.



4. If the V-STAT magnet is moved in the direction of the (a) and (b) arrows, the Red, Green and Blue points move as indicated below.



#### Operation of the BMC (Hexapole) magnet.



The movement of the magnets interact with each other and so the respective dot position should be monitored while carrying out this adjustment.

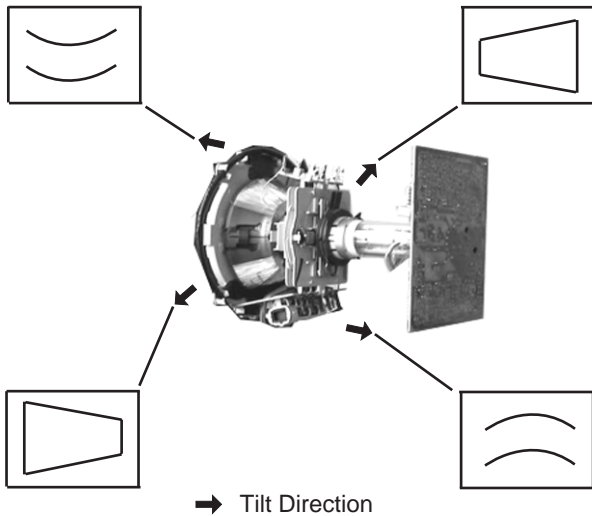
Use the H-STAT VR to adjust the Red, Green and Blue dots so that they coincide at the centre of the screen (by moving the dots in the horizontal direction).

## Geometry Adjustment.

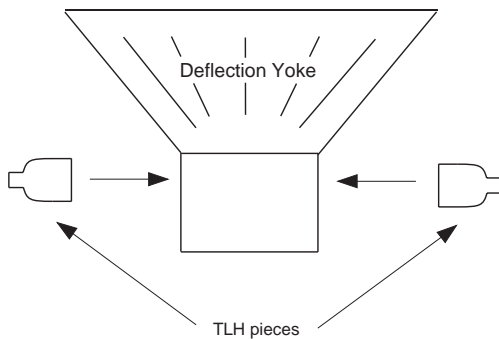
### Preparation:

Before starting this adjustment, adjust the horizontal and vertical static convergence.

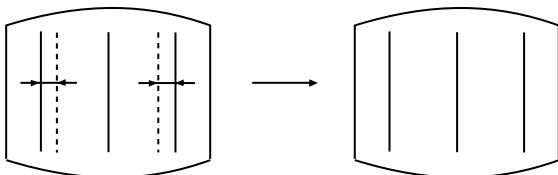
1. Remove the deflection yoke spacer.
2. Tilt the deflection yoke as indicated in the figure below and optimise the geometry.  
Tilting the DY Up and Down will balance the upper and lower pin adjustment.  
Tilting the DY Left and Right will balance the H-Trap adjustment.
3. Re-install the deflection yoke spacer.



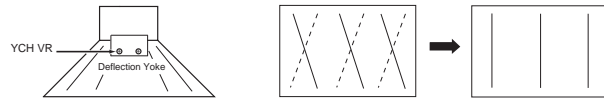
## HTIL Adjustment



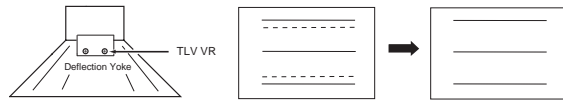
HTIL correction can be performed by adding a TLH correction assembly to the Deflection yoke.



## YCH Adjustment

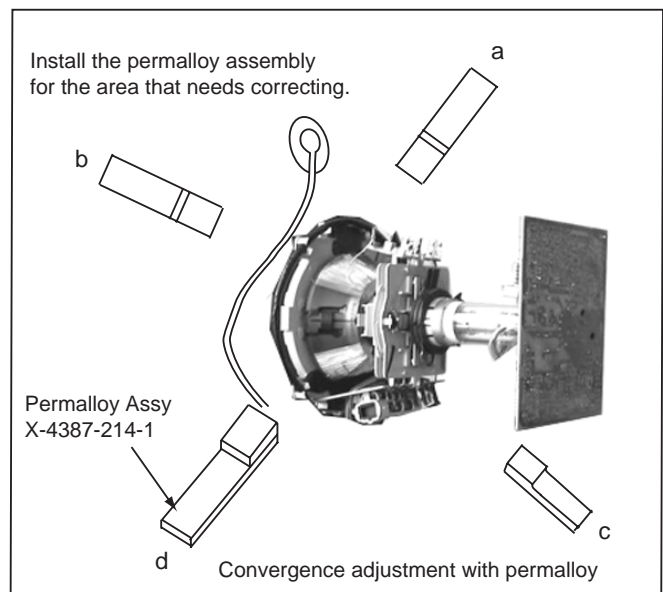
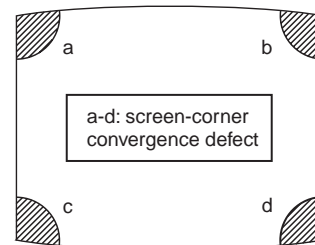


## TLV Adjustment

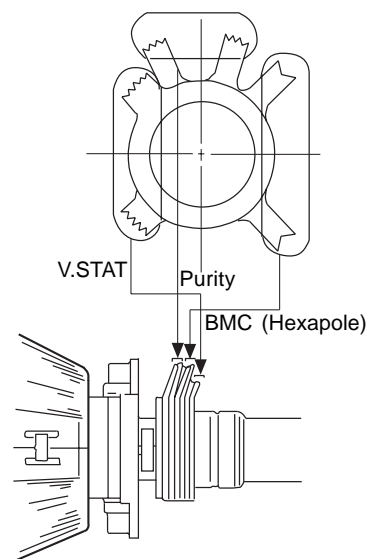


## Screen Corner Convergence

If you are unable to adjust the corner convergence properly, this can be corrected with the use of permalloy magnets.

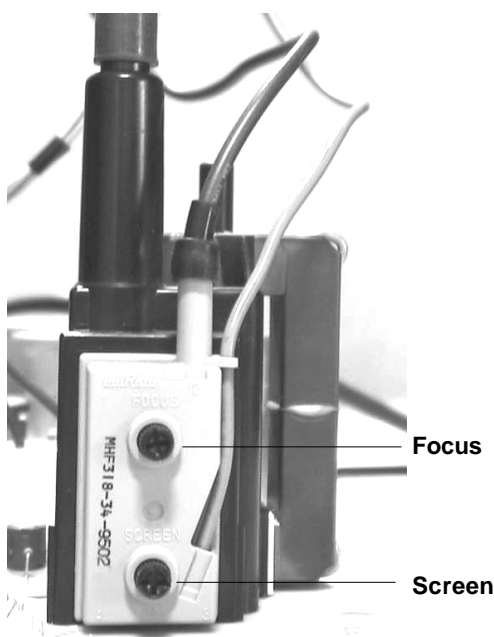






### 3-3. Focus Adjustment

1. Receive a television broadcast signal.
2. Normalize the picture setting.
3. Adjust the focus control located on the flyback transformer to obtain the best focus at the centre of the screen. Bring only the centre area of the screen into focus, the magenta-ring appears on the screen. In this case, adjust the focus to optimize the screen uniformly.



### 3-4. Screen (G2), White Balance

[Adjustment in the service mode using the remote commander]

#### G2 adjustment

1. Input a dot signal from the pattern generator.
2. Set the Picture, Brightness and Colour to minimum.
3. Apply 175V DC from an external power supply to the R, G and B cathodes of the CRT.
4. Whilst watching the picture, adjust the G2 control [SCREEN] located on the Flyback Transformer to the point just before the flyback return lines disappear.

#### White balance adjustment for TV mode

1. Input an all-white signal from the pattern generator.
2. Enter into the 'Service Mode' by pressing 'TEST', 'TEST' and 'MENU' on the Service Commander.
3. Select 'Service' from the on screen menu display and press the right arrow button on the remote commander.
4. The 'Service' menu will appear on the screen. [See Page 18]
5. Set the 'Contrast' to MAX.
6. Set the 'R-Drive' to 25.
7. Adjust the 'G-Drive' and the 'B-Drive' so that the white balance becomes optimum.
8. Press the 'OK' button to write the data for each item.
9. Set the 'Contrast' to MIN.
10. Adjust the 'G-Cutoff', and the 'R-Cutoff' with the left and right buttons on the remote commander so that the white balance becomes optimum.
11. Press the 'OK' button to write the data for each item.

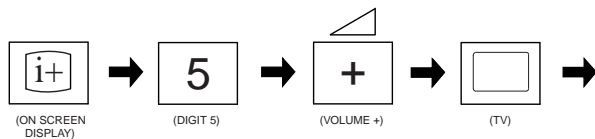
## SECTION 4 CIRCUIT ADJUSTMENTS

### 4-1. Electrical Adjustments

Service adjustments to this model can be performed using the supplied Remote Commander RM-887.

#### How to enter into the Service Mode

1. Turn on the main power switch and enter into the stand-by mode.
2. Press the following sequence of buttons on the Remote Commander.



'TT—' will appear in the upper right corner of the screen.  
Other status information will also be displayed.

3. Press 'MENU' on the remote commander to obtain the following menu on the screen.

Geometry
Service
Design
Status
IF adjust
Error Menu
FE-2 Mono v1.12
Factory data 00h 00h

4. Move to the corresponding adjustment item using the up or down arrow buttons on the Remote Commander.
5. Press the right arrow button to enter into the required menu item.
6. Press the 'Menu' button on the Remote Commander to quit the Service Mode when all adjustments have been completed.

#### Note :

- Before performing any adjustments ensure that the correct model has been selected in the 'Model Setting' menu.
- After carrying out the service adjustments, to prevent the customer accessing the 'Service Menu' switch the TV set OFF and then ON.

#### SERVICE

Offset-R	(0, 15)	Adj
Offset-G	(0, 15)	Adj
R-Drive	(0, 63)	25
G-Drive	(0, 63)	Adj
B-Drive	(0, 63)	Adj
Peak-Freq	(0, 3)	0
Luma-Delay	(0, 15)	8
SC0	(0, 3)	3
White-Peak	(0, 15)	15
Subcont	(0, 15)	Adj
Subbright	(0, 63)	Adj
Subcol	(0, 63)	Adj
Subsharp	(0, 63)	31
Br OSD	(0, 15)	11
Br TXT	(0, 15)	8

#### GEOMETRY

Left-HBlk	(0, 15)	13
Right-HBlk	(0, 15)	9
V-Angle	(0, 63)	Adj
V-Bow	(0, 63)	Adj
H-Centre	(0, 63)	Adj
H-Size	(0, 63)	Adj
Pin-Amp	(0, 63)	Adj
U-Corner-Pin	(0, 63)	Adj
L-Corner-Pin	(0, 63)	Adj
Pin Phase	(0, 63)	Adj
V-Linearity	(0, 63)	Adj
V-Size	(0, 63)	Adj
S-Correction	(0, 63)	Adj
V-Centre	(0, 63)	Adj
V-Zoom	(0, 63)	25

#### ERROR MENU

E02	OCP	(0, 255)	0
E03	OVP N/A	(0, 255)	0
E04	VSNC	(0, 255)	0
E05	IKR	(0, 255)	0
E06	IIC	(0, 255)	0
E07	NVM	(0, 255)	0
E08	JUNGLE	(0, 255)	0
E09	TUNER	(0, 255)	0
E10	SOUNDP	(0, 255)	0
E11	8V	(0, 255)	0

#### WORKING TIME

HOURS	0
MINUTES	0

#### IF ADJUST

AGC Adjust	(0, 255)	0
Automute	(0, 255)	1
Audio Gain	(0, 255)	0
L Gating	(0, 255)	1



## Sub Brightness Adjustment

1. Input a Monoscope pattern.
2. Press 'TEST' 'TEST' 13 on the Remote Commander.
3. Adjust the 'Sub-Brightness' data so that there is barely a difference between the 0 IRE and 10 IRE signal levels.

## Sub Contrast Adjustment

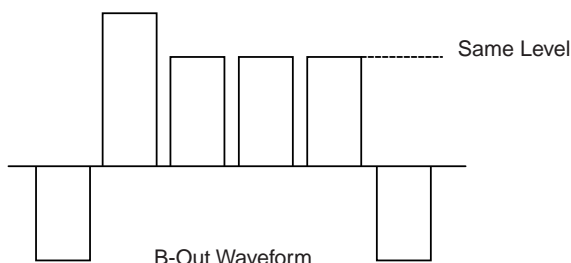
1. Input a video signal that contains a small 100% white area on a black background.
2. Connect an digital voltmeter to Pin 10 of J701 [C Board].
3. Adjust the 'Sub-Contrast' data [ 'TT11' ] to obtain a voltage of  $95 \pm 0.5V$ .

## Sub Colour Adjustment

1. Receive a PAL colour bar signal.
2. Connect an oscilloscope to Pin 3 of CN504 [A Board].
3. Enter into the 'Service' service menu.
4. Adjust the 'Sub Colour' data so that the Cyan, Magenta and Blue colour bars are of equal levels as indicated below.

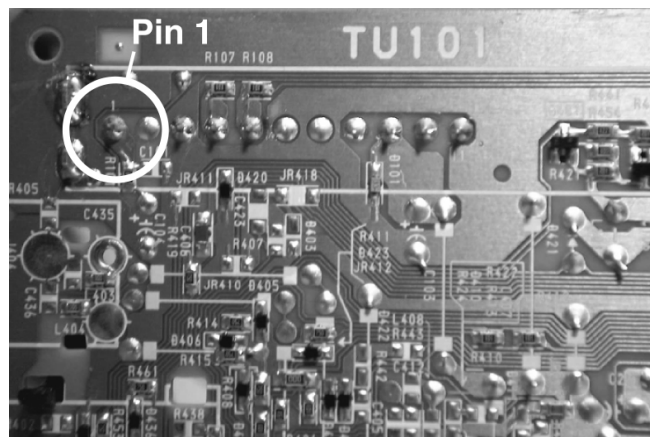
### Note:

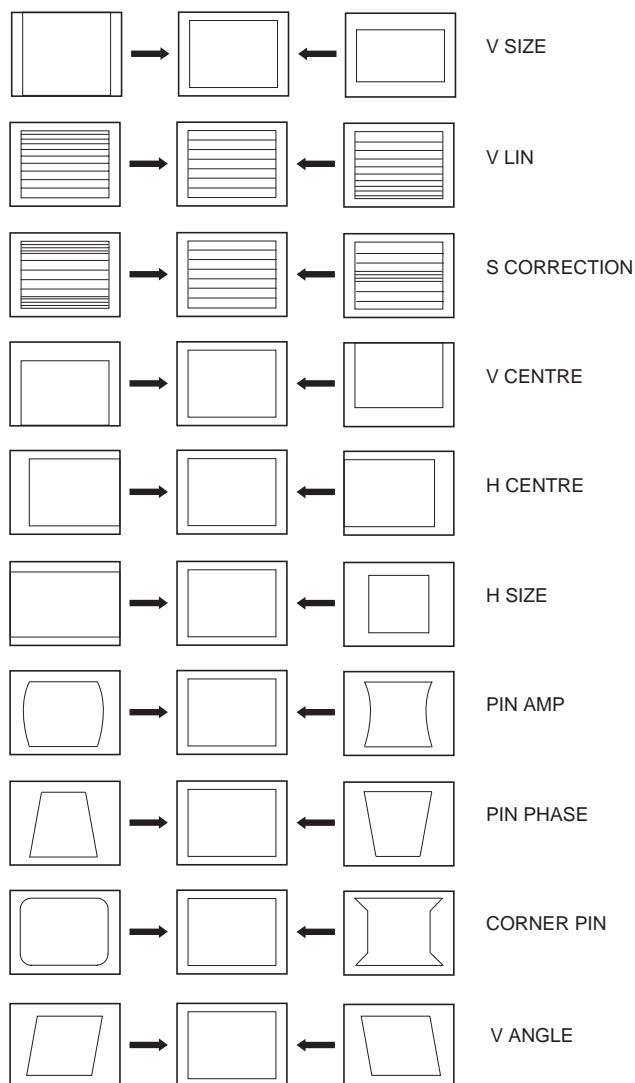
Ensure that no signal is applied to the Antenna socket while carrying out the following IF adjustments.



## Tuner AGC Adjustment

1. Set the "AGC adjust" register value :
  - For destination France set the value to 6.
  - All other destinations set the value to 0.
2. Receive a signal of 64dBuV / 75 ohm terminated [62dBuV / 75 ohms for B model] via the tuner antenna socket.
3. Connect a voltmeter to pin1 of TU101 [print side of A Board] or to the AGC pin of CN001 [mount side of A Board].
4. Confirm that the AGC voltage is 3.5volts  $\pm$  0.3volts.
5. If adjustment is required, enter into the 'Test Menu'.
6. Select the 'AGC Adjust' menu item.
7. Adjust the data using the left and right arrow buttons on the Remote Commander to obtain a voltage of 3.5V  $\pm$  0.3V.





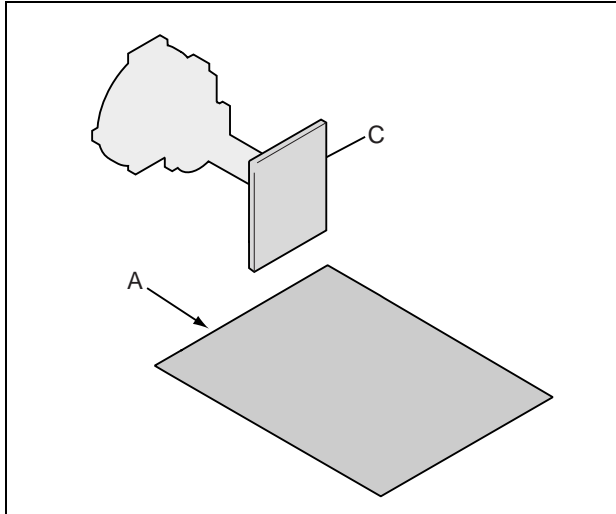
## 4-2. TEST MODE 2:

Is available by pressing the 'TEST' button twice, OSD 'TT' appears. The functions described below are available by selecting the two numbers. To release the 'Test mode 2', press 00, 10, 20 ... twice or switch the TV set into Stand-by mode. In 'TT Menu' mode, it is possible to remove the Menu from the screen by pressing the Speaker Off button once. Pressing the Speaker OFF button a second time will cause the Menu to reappear. The function is kept even when the menu is not displayed on screen !!.

00	'TT' mode off
01	Picture maximum
02	Picture minimum
03	Set speaker/headphone Volume to 35%
04	Set speaker/headphone Volume to 50%
05	Set speaker/headphone Volume to 65%
06	Set speaker/headphone Volume to 80%
07	Ageing mode
08	Shipping Condition
11	Sub picture adjustment
12	Sub colour adjustment
13	Sub Brightness adjustment
14	Text H Position adjustment
15	Picture Rotation Test
16	Picture level 50%
19	Toggle Factory Mode
21	Destination ADE
22	Destination BL
23	Destination ADE
24	Destination U
25	Destination ADE
26	Destination BL
27	Destination KR
28	Destination KR
31	Auto Sutoff Disable/Enable
33	Rotation ON/OFF
35	No Function
36	No Function
38	Enter G2 Adjustment
41	Re-initialise NVM (Prog 59)
42	Re-initialise geometry (Prog 59)
48	Set NVM as non virgin (Prog 59)
49	Set NVM as virgin (Prog 59)
61	Auto AGC adjustment
63	No Function
64	Enable/disable RGB priority
65	RGB auto-detect enable/disable
66	On timer enable/disable
67	Manual AGC adjustment
68	Enable/disable X26 countermeasure (N problem)
71	Force PAL video (Factory Use Only)
72	Un-force PAL(restore normal video condition)
87	Local keys test
88	No Function
89	Enable/disable watchdog
99	Display Error and Working Time menu

## This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

## 5-2. CIRCUIT BOARD LOCATION












## 5-3. SCHEMATIC DIAGRAMS AND PRINTED WIRING BOARDS


### Note :


- All capacitors are in  $\mu\text{F}$  unless otherwise noted.
- pF :  $\mu\mu\text{F}$  50VV or less are not indicated except for electrolytic types.
- Indication of resistance, which does not have one for rating electrical power, is as follows.


Pitch : 5mm  
Electrical power rating : 1/4W

- Chip resistors are 1/10W
- All resistors are in ohms.  
k = 1000 ohms, M = 1000,000 ohms
-  : nonflammable resistor.
-  : fusible resistor.
-  : internal component.
-  : panel designation or adjustment for repair.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- All voltages are in Volts.
- Readings are taken with a 10Mohm digital multimeter.
- Readings are taken with a color bar input signal.
- Voltage variations may be noted due to normal production tolerances.
-  : B + bus.
-  : B - bus.
-  : RF signal path.
-  : earth - ground.
-  : earth - chassis.

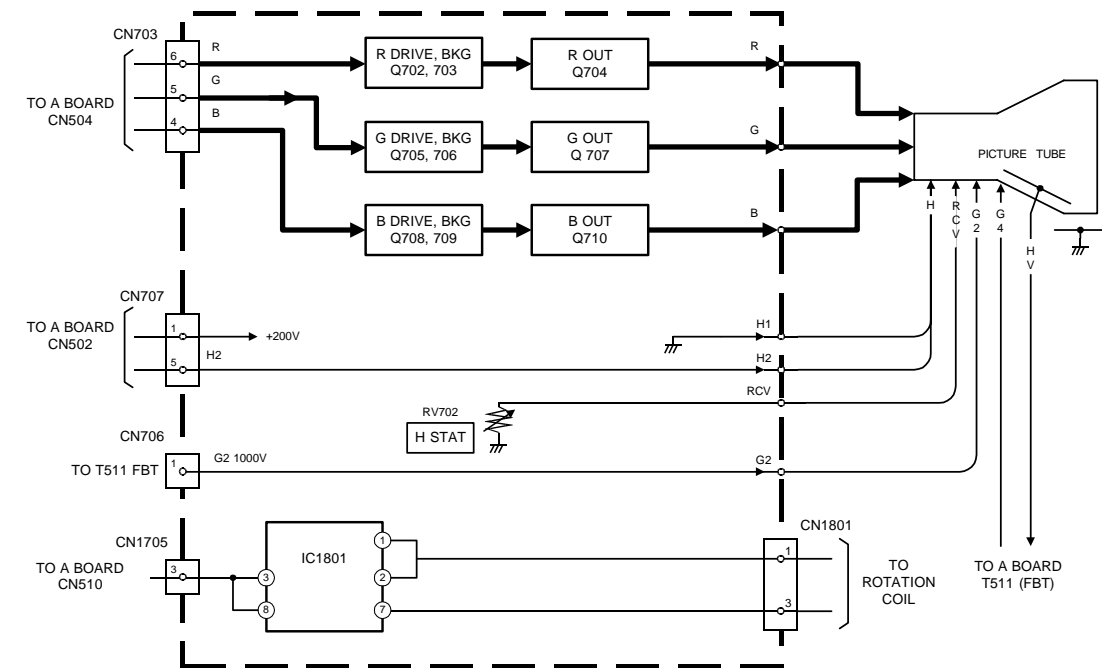
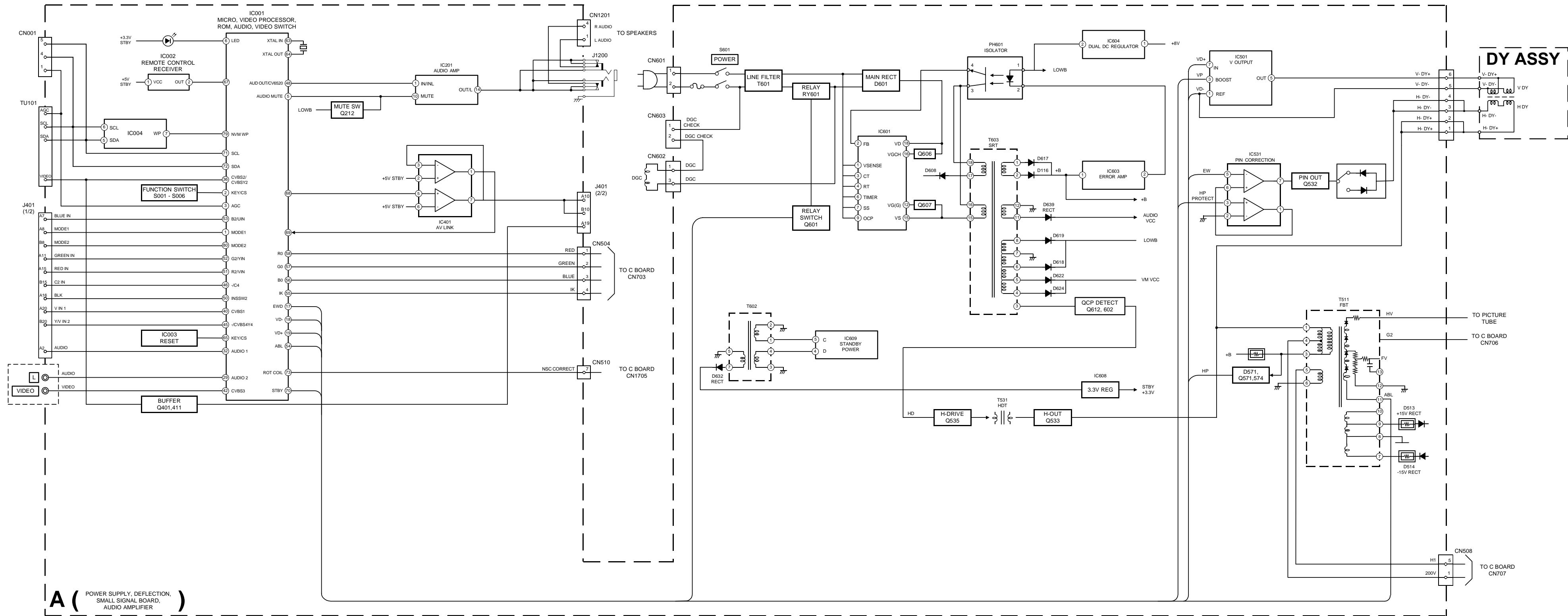
## Reference Information

RESISTOR	RN	: METAL FILM
	RC	: SOLID
	FPRD	: NON FLAMMABLE CARBON
	FUSE	: NON FLAMMABLE FUSIBLE
	RS	: NON FLAMMABLE METAL OXIDE
	RB	: NON FLAMMABLE CEMENT
	RW	: NON FLAMMABLE WIREWOUND
		: ADJUSTMENT RESISTOR
COIL	LF-8L	: MICRO INDUCTOR
CAPACITOR	TA	: TANTALUM
	PS	: STYROL
	PP	: POLYPROPYLENE
	PT	: MYLAR
	MPS	: METALIZED POLYESTER
	MPP	: METALIZED POLYPROPYLENE
	ALB	: BIPOLAR
	ALT	: HIGH TEMPERATURE
	ALR	: HIGH RIPPLE

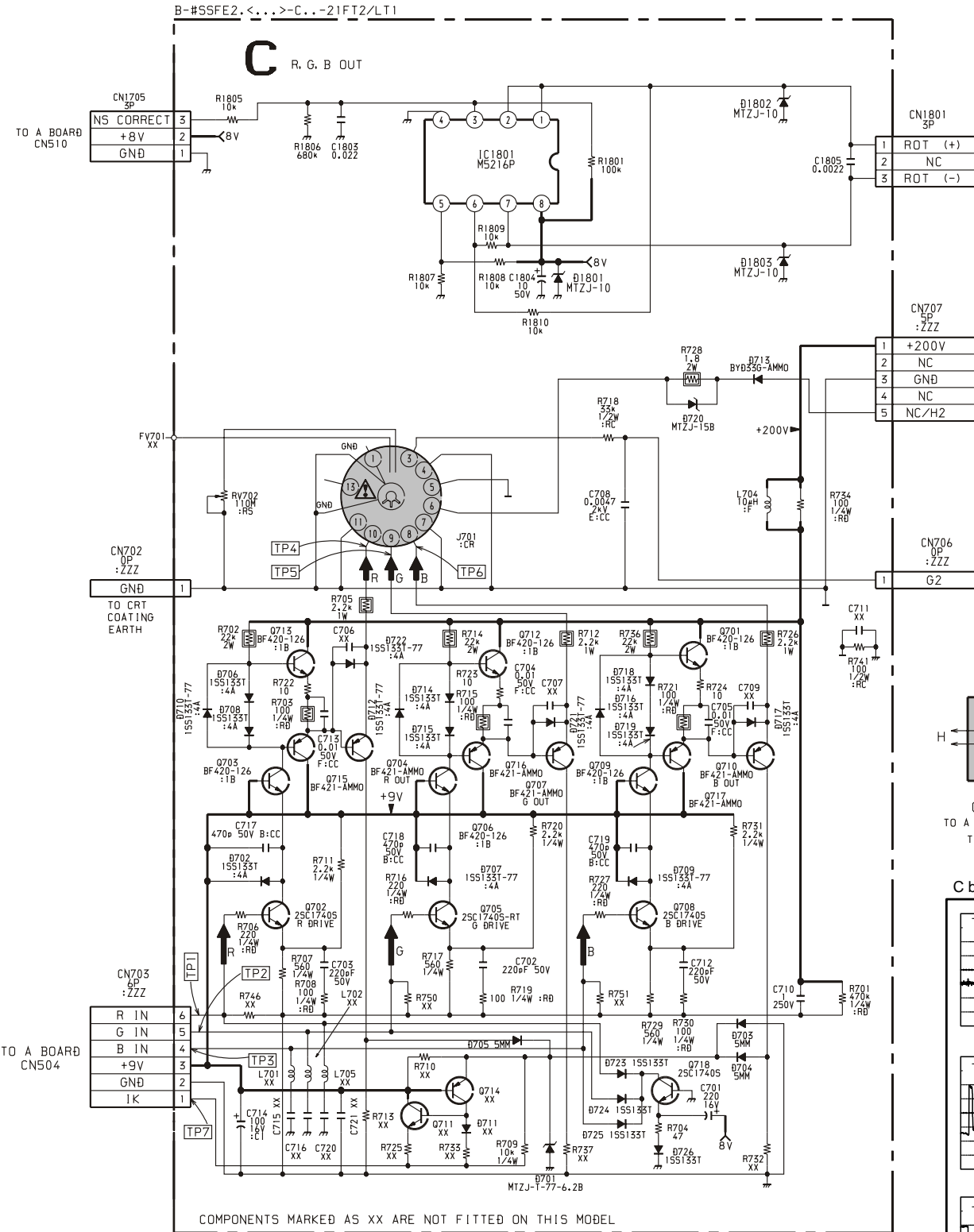
**Note :** The components identified by shading and marked  are critical for safety. Replace only with the part numbers specified in the parts list.

**Note :** Les composants identifiés par une trame et par une marque  sont d'une importance critique pour la sécurité. Ne les remplacer que par des pièces de numéro spécifié.

5-2. BLOCK DIAGRAMS (1)

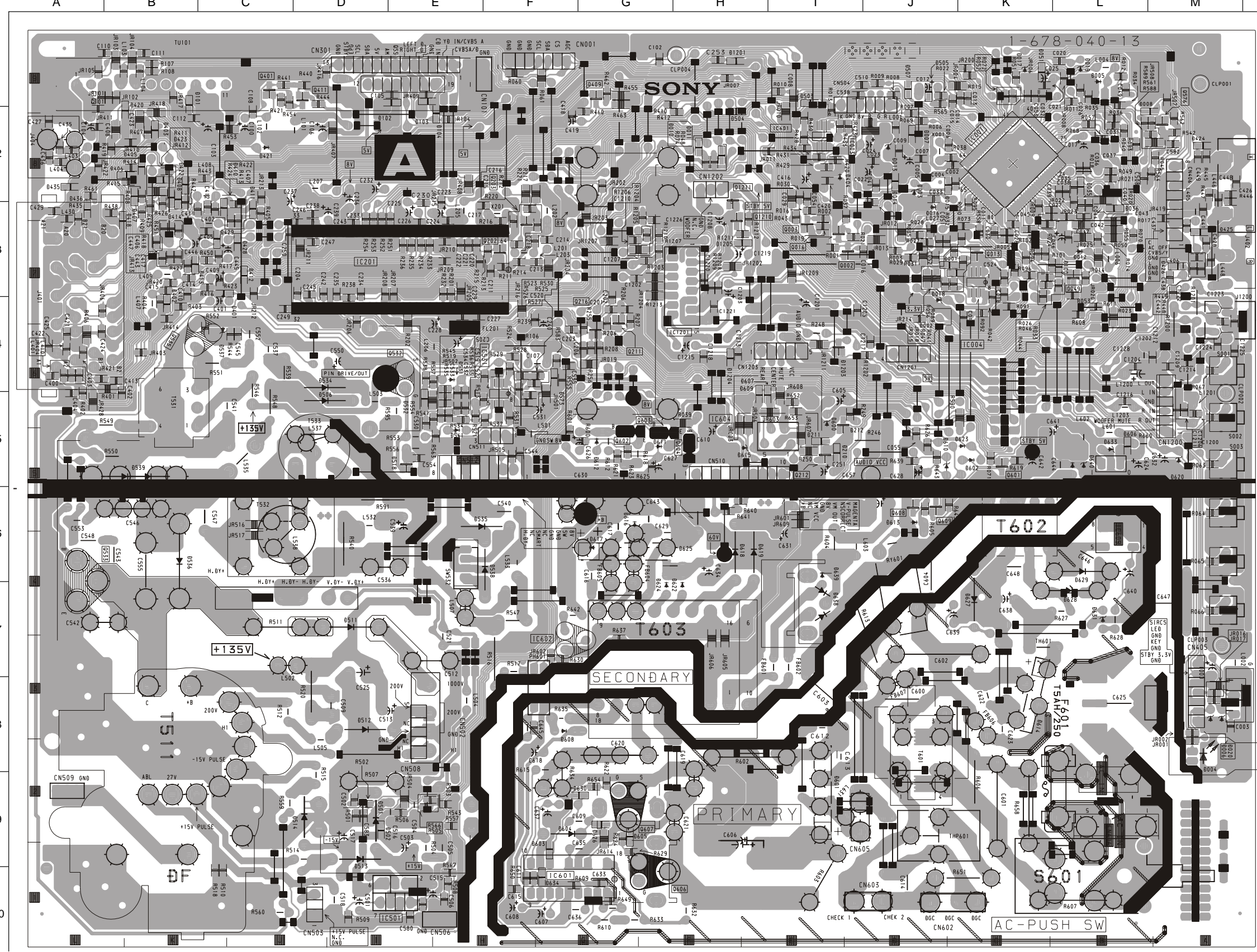
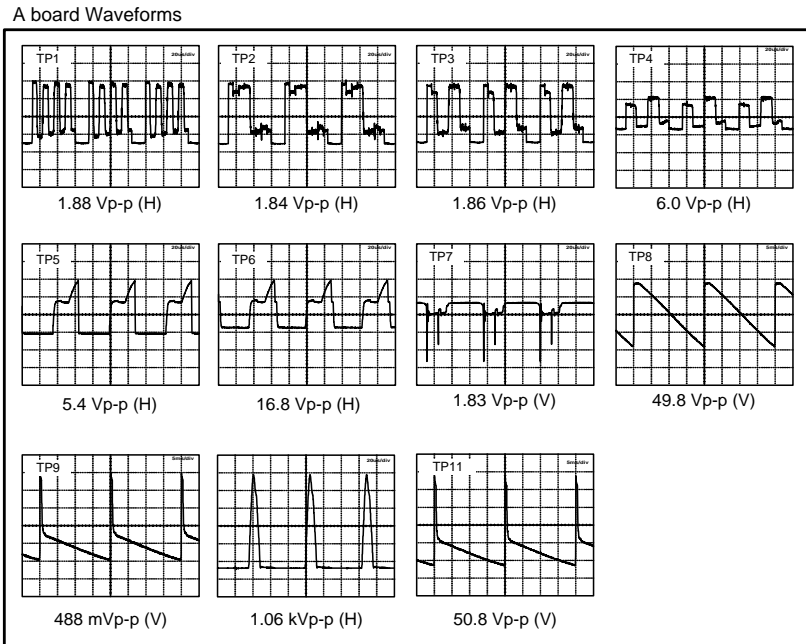
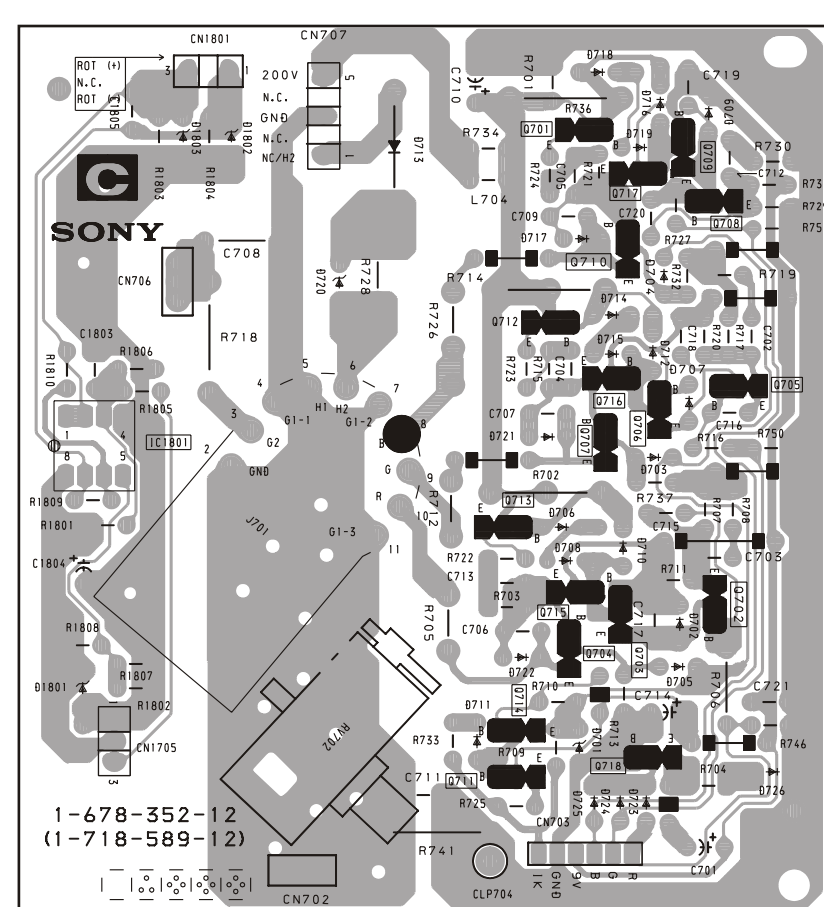






C board Semiconductor Voltage Table							
Ref	(e)	(b)	(c)	Ref	(e)	(b)	(c)
Q701	124.2	124.8	202	Q706	7.5	8.1	125.0
Q702	2.3	3.0	7.5	Q707	124.6	125.8	5.5
Q703	7.5	8.1	131.6	Q708	3.5	2.1	7.5
Q704	131	132.4	5.2	Q709	7.5	8.1	123.3
Q705	2.5	3.1	7.5	Q710	123.0	124.3	5.5
				Q717	124.2	123.4	8.1

C board IC Voltage Table							
IC Voltage Table							
Ref No	Pin No	Voltage (V)					
IC1801	1	1.3					
	2	1.3					
	3	1.4					
	4	4.1					
	6	4.1					
	7	7.0					
	8	8.0					



A board IC Voltage Table

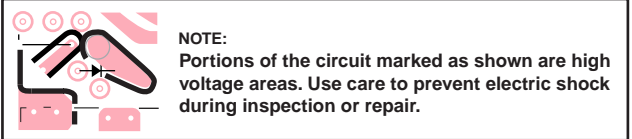
IC Voltage Table							
Ref No	Pin No	Voltage (V)					
IC001	1	0					
	2	3.2					
	3	2.9					
	5	0					
	6	2.0					
	8	2.3					
	9	8.0					
	10	5.0					
	12	0					
	13	0					
IC501	14	4.0					
	16	1.4					
	17	1.5					
	18	0					
	19	0					
	20	3.8					
	21	3.8					
	22	5.0					
	26	0					
	28	3.5					
IC531	29	3.6					
	30	1.9					
	31	0.3					
	32	3.6					
	34	1.9					
	35	1.4					
	36	3.9					
	38	1.8					
	40	3.3					
	42	3.3					
IC601	43	1.4					
	45	0					
	46	0					
	47	3.6					
	48	2.8					
	49	2.3					
	50	0.2					
	51	2.5					
	52	2.5					
	53	2.5					
IC1201	54	2.1					
	55	5.2					
	56	3.0					
	57	3.1					
	58	3.1					
	59	3.2					
	62	0					
	63	0					
	64	0					
	65	0					

A board Semiconductor Voltage Table

Ref	(e)	(b)	(c)	Ref	(e)	(b)	(c)
Q013	0	0.7	0	Q604	0	0	2.5
Q016	0	0	3.3	Q608	0	0	5.6
Q212	0	0.7	0	Q609	5.6	5.6	0
Q401	4.8	4.2	1.8				
Q411	1.1	1.7	4.2	Ref	(s)	(g)	(d)
Q601	5.6	4.8	5.3	Q606	10.9	14.5	86.7
Q602	14.2	5.1	8	Q607	-82.4	+79.9	10.9
Q603	8	8	0	Q635	0	2.5	95.2

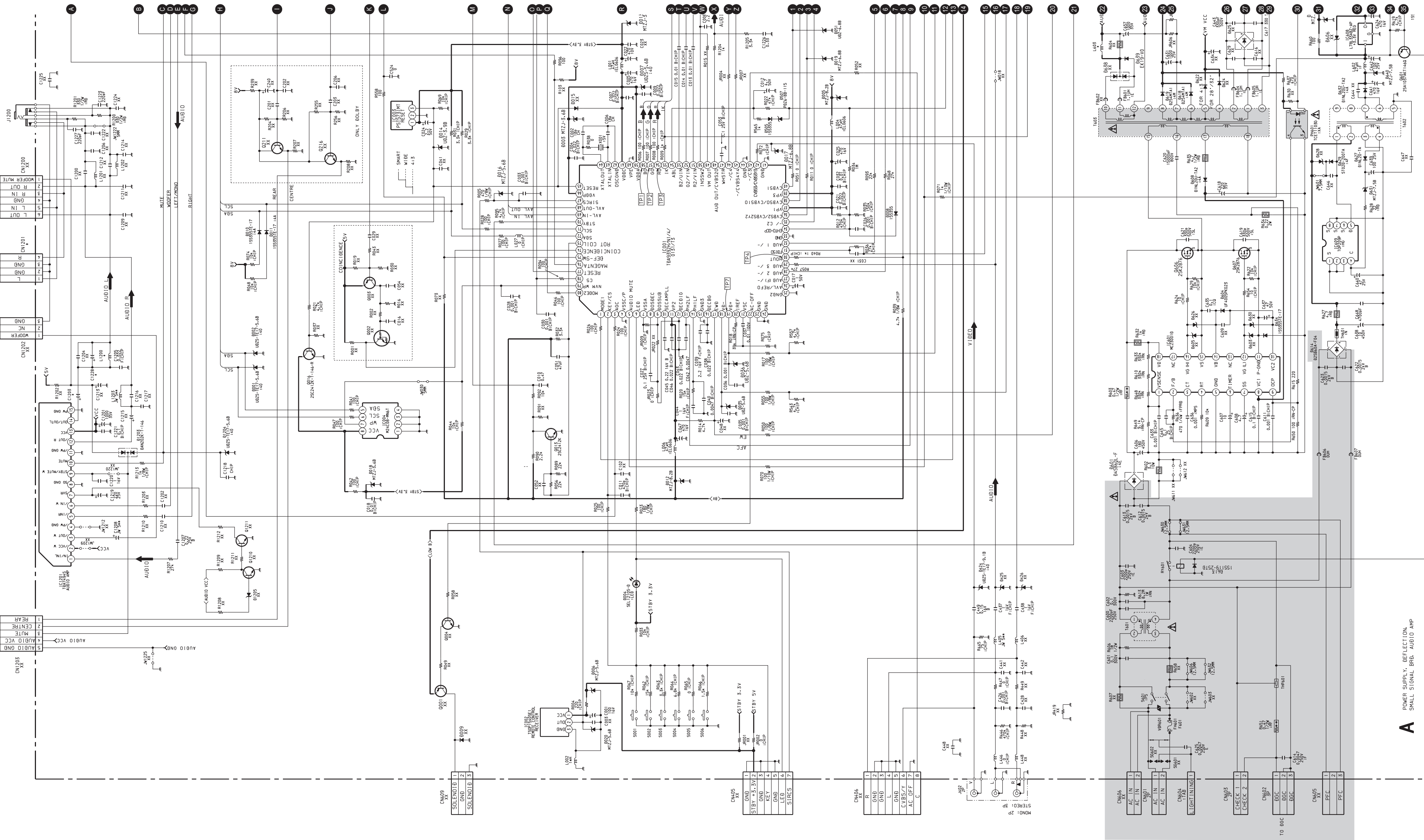
A board Location Table

DIODE				IC			
D001	J - 2	D435	A - 2	D634	F - 10		
D002	J - 4	D436	A - 3	D639	I - 6		
D003	J - 2	D501	D - 9	D640	L - 5		
D004	M - 8	D502	D - 9	D1201	H - 1		
D006	M - 8	D503	I - 1	D1203	I - 4		
D007	J - 2	D504	H - 2	D1204	H - 4		
D008	L - 1	D505	J - 1				
D010	G - 2	D506	D - 5	IC001	K - 2		
D011	H - 2	D507	J - 1	IC002	M - 8		
D012	J - 2	D512	D - 8	IC003	I - 2		
D013	M - 8	D513	D - 9	IC004	K - 4		
D014	M - 8	D514	C - 9	IC401	I - 2		
D016	J - 2	D534	D - 4	IC501	D - 10		
D017	L - 1	D535	E - 6	IC531	E - 4		
D018	G - 2	D536	B - 6	IC601	F - 10		
D019	L - 1	D537	C - 4	IC602	F - 7		
D020	M - 8	D538	F - 6	IC604	H - 5		
D035	L - 2	D539	B - 5	IC608	L - 6		
D036	L - 2	D573	F - 5	IC609	L - 6		
D051	K - 1	D601	I - 9	IC1201	H - 4		
D101	B - 1	D602	K - 5				
D103	E - 2	D603	F - 9	Q013	K - 3		
D104	E - 2	D610	J - 5	Q016	I - 3		
D210	I - 5	D611	G - 5	Q212	I - 5		
D211	I - 5	D612	G - 5	Q401	C - 1		
D212	I - 5	D613	J - 6	Q411	D - 1		
D402	B - 2	D614	K - 8	Q532	D - 4		
D404	I - 2	D615	H - 5	Q533	A - 6		
D405	B - 2	D616	G - 6	Q535	B - 4		
D406	B - 2	D617	G - 6	Q601	K - 5		
D407	B - 3	D618	H - 6	Q602	G - 5		
D408	B - 2	D619	H - 6	Q603	G - 5		
D412	C - 3	D620	M - 5	Q604	G - 5		
D414	B - 3	D621	J - 5	Q606	G - 10		
D420	B - 1	D622	K - 7	Q607	G - 9		
D421	C - 2	D623	L - 6	Q608	J - 6		
D423	B - 2	D627	K - 7				
D424	M - 2	D631	L - 5				
		D633	L - 5				



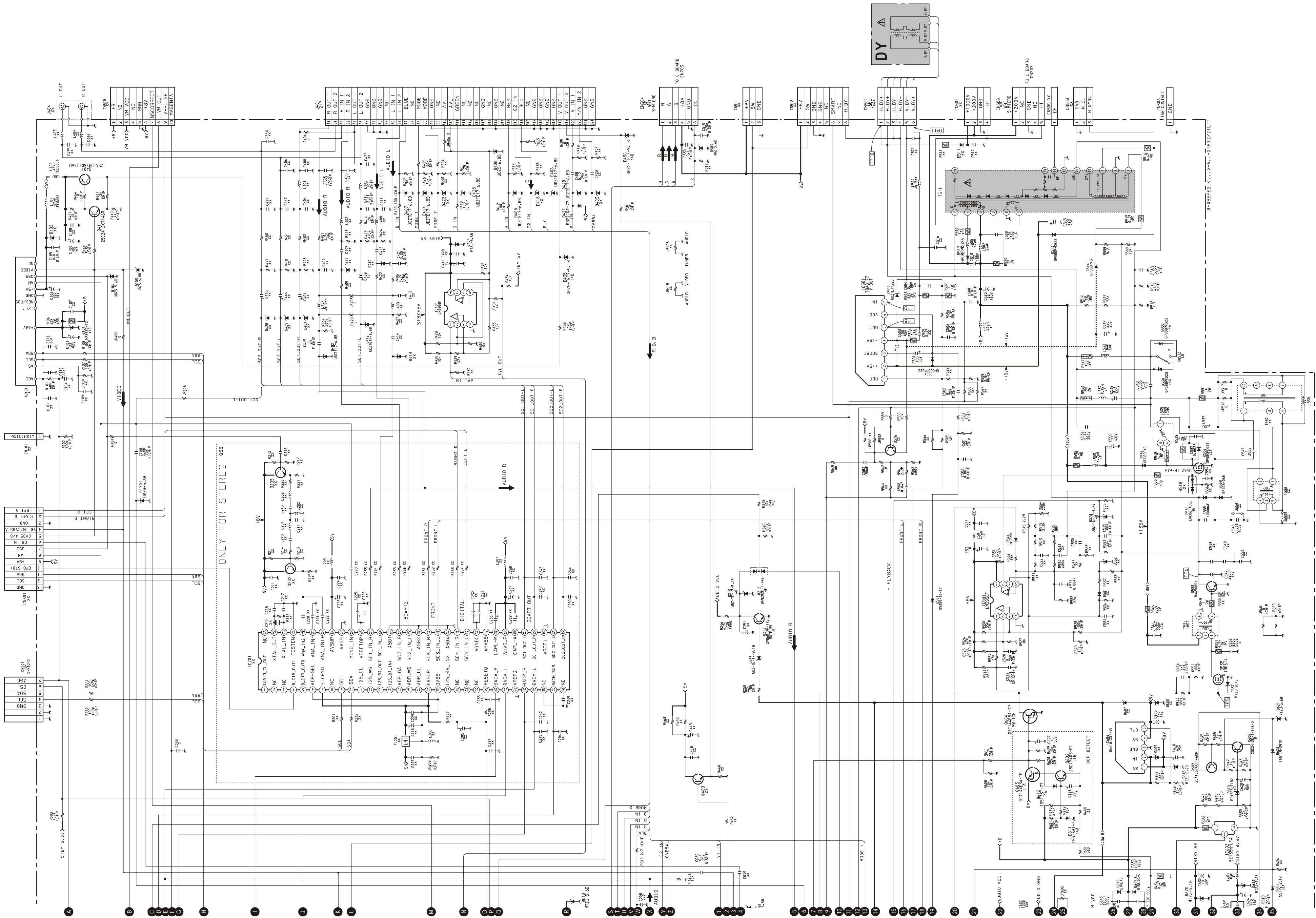


Ref	KV-21LT1B	KV-21LT1E	KV-21LT1K	KV-21LT1U	KV-21FT2K
C1203	1000uF	1000uF	1000uF	1000uF	JW 5.0mm
C1228	-	-	-	-	2200uF
CN1201	PLUG, CONNECTOR 3P	PLUG, CONNECTOR 3P	PLUG, CONNECTOR 3P	PLUG, CONNECTOR 3P	PLUG, CONNECTOR 4P
L603	3.3uH	3.3uH	3.3uH	3.3uH	JW 5.0mm
L1200	JW 5.0mm	JW 5.0mm	JW 5.0mm	JW 5.0mm	-
TU101	BTF-EF411	BTF-EC401	BTF-EP401	BTF-EU601	BTF-EP401



**A** POWER SUPPLY, REFLECTION,  
SMALL SIGNAL BRD, AUDIO AMP

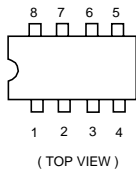
COMPONENTS MARKED AS XX ARE NOT FITTED ON THIS MODEL



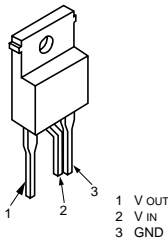


5-4. SEMICONDUCTORS

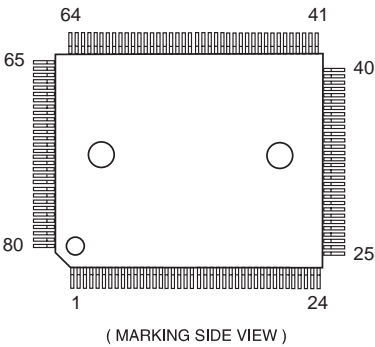
LM393DT  
TDA2822M  
TEA2124



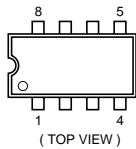
SE-135N  
SE135N-LF12



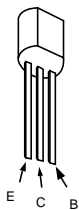
TDA9392H



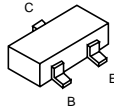
TOP209P



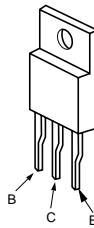
BF421-AMMO  
2SA1091-O



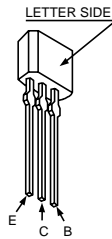
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DTC114EKA-T146  
DTC143TKA-T146  
DTC144EKA-T-146R  
2SA1037K-T-146-R  
R2SA1162-G  
2SA1037K-T-146-QR  
2SD601A-QTX  
2SC1623-L5-L6  
2SC2412K-QR  
2SC2412K-T-146-R



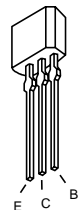
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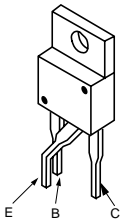
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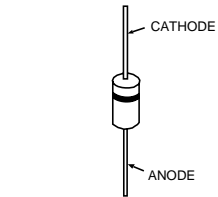
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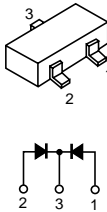
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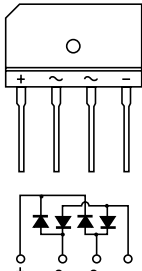
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AU-01Z-V1	ERC06-15SL
BYD33G	FMN-G12S
BYD33G-AMMO	GP08DPKG23
DINL20-U-TA2	RG1CLF-B1
DINL40-U-TR2	RGP10GPKG23
ERB44-06TP1	RU-3AM
EGP20G	RU3YX-LF-C4
EG-1Z-V1	RU3YX-V1
EL1Z	RU-4AM-T3
ERD28-06S	1SS292T-77



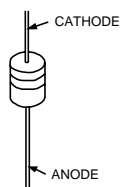
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DAN202K-T146



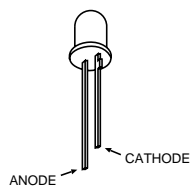
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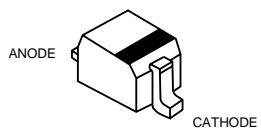
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MTZJ-T-77-2.2A	MTZJ-7.5B
HZS9.INBZ	RD3.9ES-B2
MTZJ-T-77-3.6B	RD5.6ESB2
MTZJ-T-77-5.6B	RD6.8ES-B2
MTZJ-T-77-5.6C	RD7.5ESB2
MTZJ-T-77-6.8A	RD9.1ES-B3
MTZJ-T-77-6.8C	RD10ESB2
MTZJ-T-77-8.2B	RD15ESB2
MTZJ-T-77-7.5B	1SS119-25TD
MTZJ-T-77-9.1A	1SS133T-77
MTZJ-T-77-9.1C	
MTZJ-T-77-10	



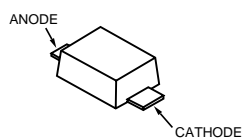
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RD12SB2  
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UDZS-TE-17-9.1B  
UDZ-TE-17-22B

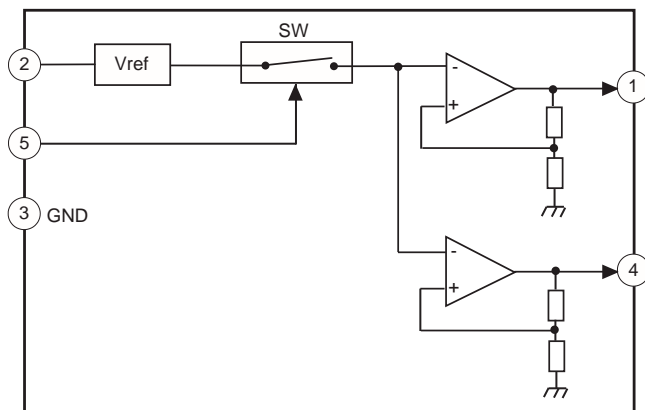


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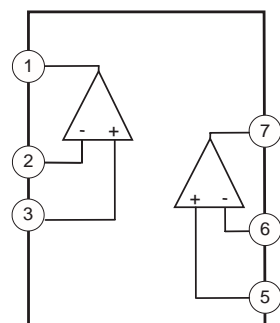


## 5-5 IC BLOCK DIAGRAMS

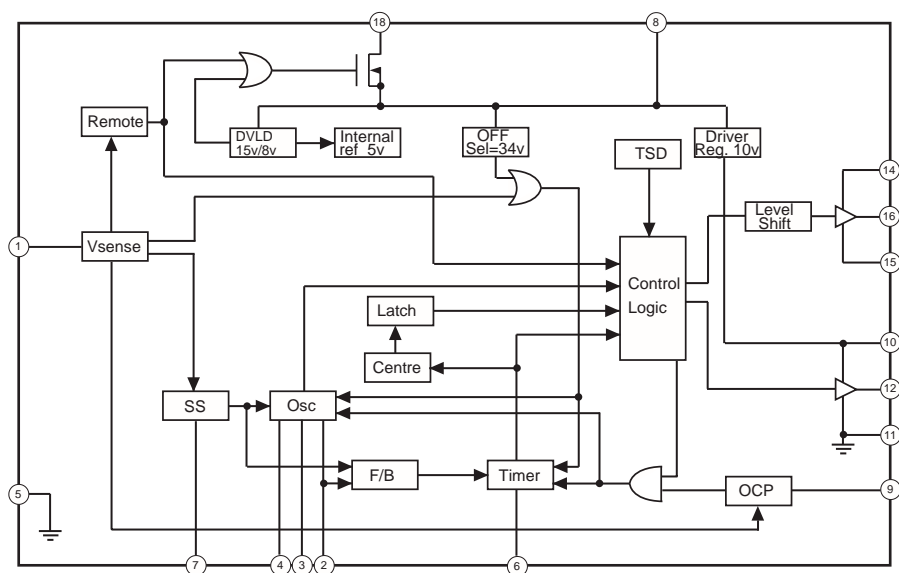
**A BOARD IC604 BA41W12ST**



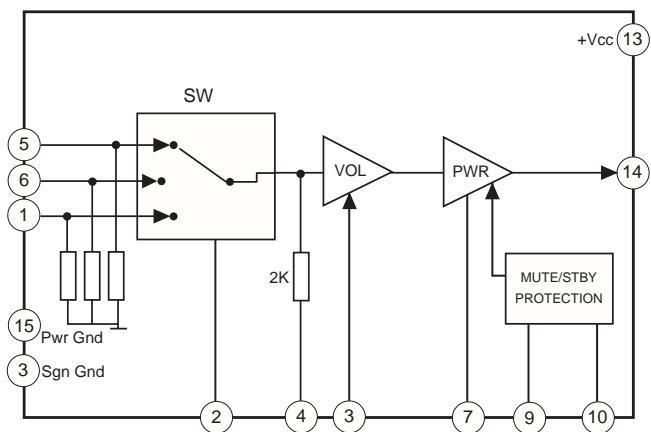
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**A BOARD IC601 MCZ3001D**



**A BOARD IC1201 TDA7494**



## SECTION 6 EXPLODED VIEWS

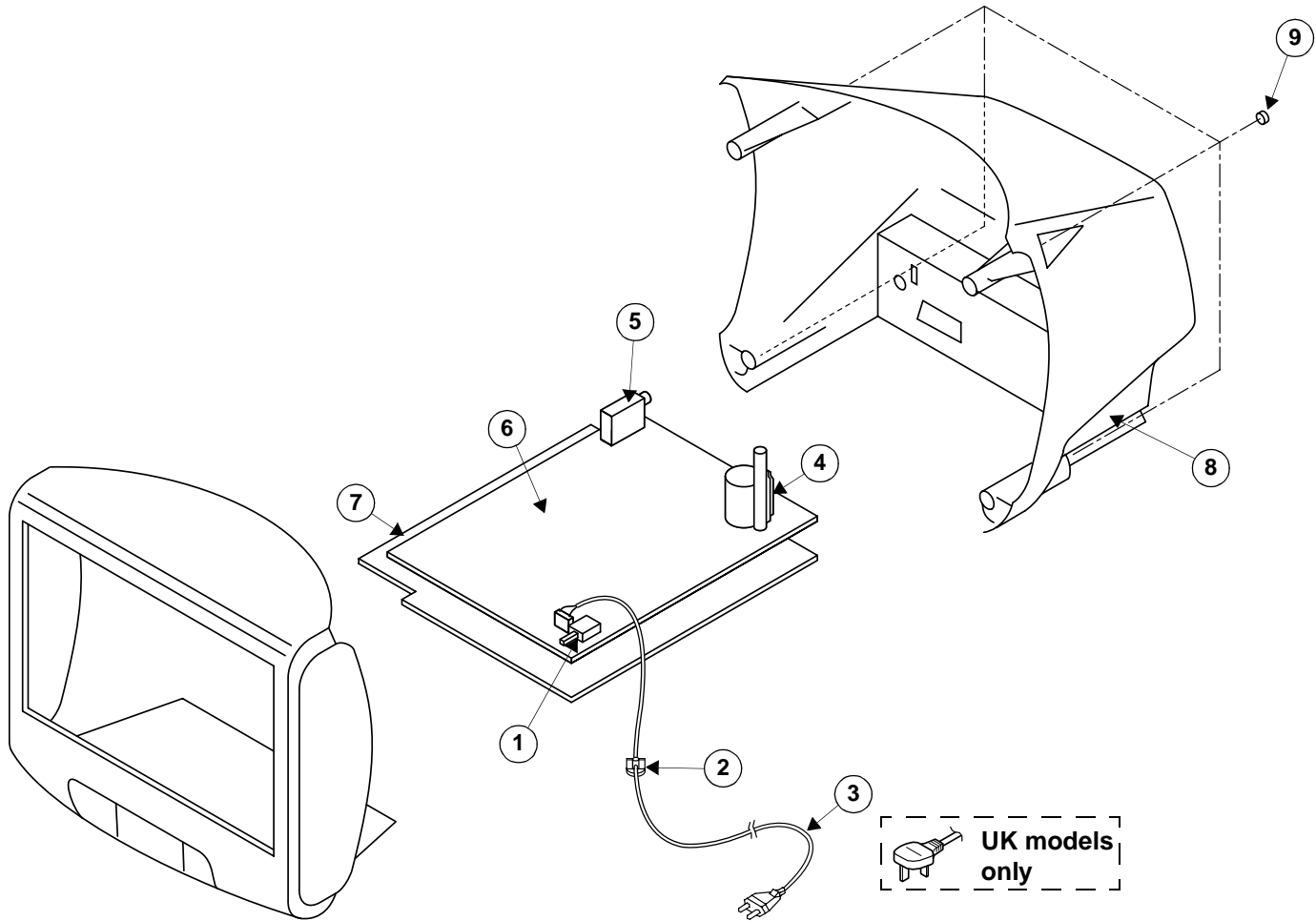
### NOTE :

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remarks column.
- Items marked “\*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

**Note :** Les composants identifiés par une trame et par une marque  $\Delta$  sont d'une importance critique pour la sécurité. Ne les remplacer que par des pièces du numéro spécifié.

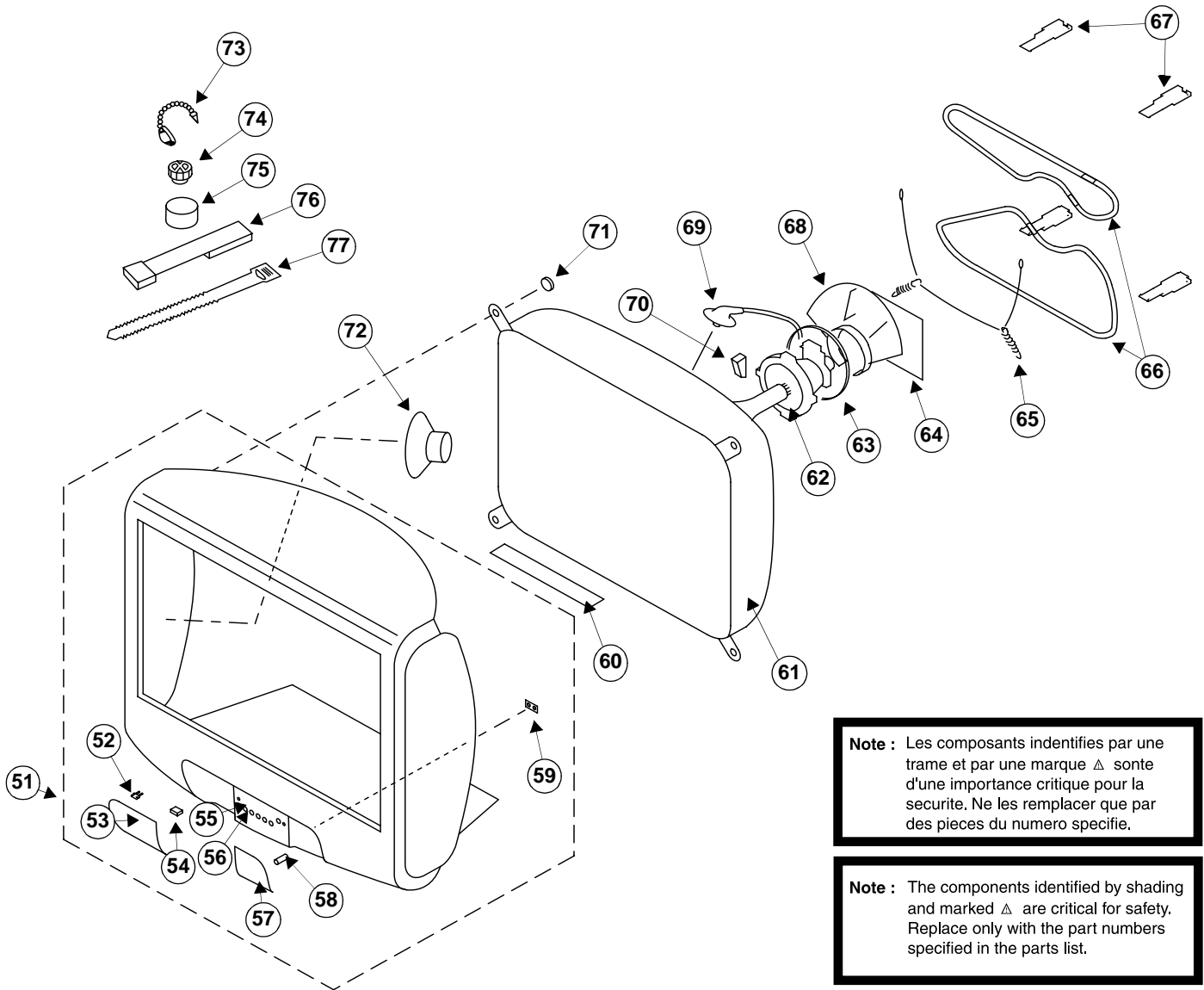
**Note :** The components identified by shading and marked  $\Delta$  are critical for safety. Replace only with the part numbers specified in the parts list.

### 6-1. KV-21LT1 CHASSIS



REF. NO.	PART. NO	DESCRIPTION	REMARK	REF. NO.	PART. NO	DESCRIPTION	REMARK
1	$\Delta$ 1-571-433-21	SWITCH, PUSH (AC POWER)		6	*A-1632-893-A	A BOARD, COMPLETE (KV-21LT1B)	
2	*4-202-531-01	AC CORD LOCK (SC)			*A-1632-880-A	A BOARD, COMPLETE (KV-21LT1E)	
3	$\Delta$ 1-765-286-11	CORD, POWER (KV-21LT1B/21LT1E/21LT1K)			*A-1632-892-A	A BOARD, COMPLETE (KV-21LT1K)	
	$\Delta$ 1-776-860-11	POWER CORD, FILTER (KV-21LT1U)			*A-1632-894-A	A BOARD, COMPLETE (KV-21LT1U)	
4	$\Delta$ 1-453-345-11	TRANSFORMER ASSY, FLYBACK (NX1748/M3A4)		7	*4-204-143-02	BRACKET, MAIN	
5	8-598-535-00	FRONTEND BTF-EF411 (KV-21LT1B)		8	4-205-362-01	REAR COVER	
	8-598-531-00	FRONTEND BTF-EC401 (KV-21LT1E)		9	7-685-663-71	SCREW +BVTP 4X16 TYPE 2 IT-3	
	8-598-537-00	FRONTEND BTF-EP401 (KV-21LT1K)					
	8-598-527-00	FRONTEND BTF-EU601 (KV-21LT1U)					

## 6-2. KV-21LT1 PICTURE TUBE



REF. NO.	PART. NO	DESCRIPTION	REMARK	REF. NO.	PART. NO	DESCRIPTION	REMARK
51	X-4200-621-1	BEZNET ASSY	52-59	65	4-369-318-21	SPRING, TENSION	
52	4-047-464-01	CATCHER, PUSH		66	Δ 1-419-187-11	COIL, DEGAUSSING	
53	4-205-364-01	DOOR		67	*4-204-900-01	BAND, DGC	
54	4-205-365-01	SHAFT DOOR		68	*4-202-554-01	HOLDER, HV CABLE	
55	4-205-376-01	MULTI BUTTON		69	Δ 1-251-839-21	CAP ASSY, HIGH VOLTAGE	
56	4-205-550-01	COVER MULTI BUTTON		70	3-704-495-01	SPACER, DY	
57	4-205-363-01	BUTTON, POWER		71	4-365-808-01	SCREW (5), TAPPING	
58	4-204-426-01	SPRING		72	1-529-711-11	SPEAKER, (8CM)	
59	4-205-375-01	GUIDE, LIGHT		73	4-308-870-00	CLIP, LEAD WIRE	
60	4-204-666-01	SHEET, BLOTTING		74	1-452-094-00	MAGNET, ROTATABLE DISK; 15MM Ø	
61	Δ 8-738-836-05	PICTURE TUBE (A51LPT60X) (SD-313)		75	1-452-032-00	MAGNET, DISK; 10MM Ø	
62	Δ 8-451-505-11	DEFLECTION YOKE (Y21RSA-S)		76	X-4387-214-1	PERMALLOY ASSY, CORRECTION	
63	1-452-728-61	COIL, NA ROTATION (RT-154)		77	3-701-007-00	BAND, BINDING	
64	*A-1639-004-A	C BOARD, COMPLETE					

## SECTION 6 EXPLODED VIEWS

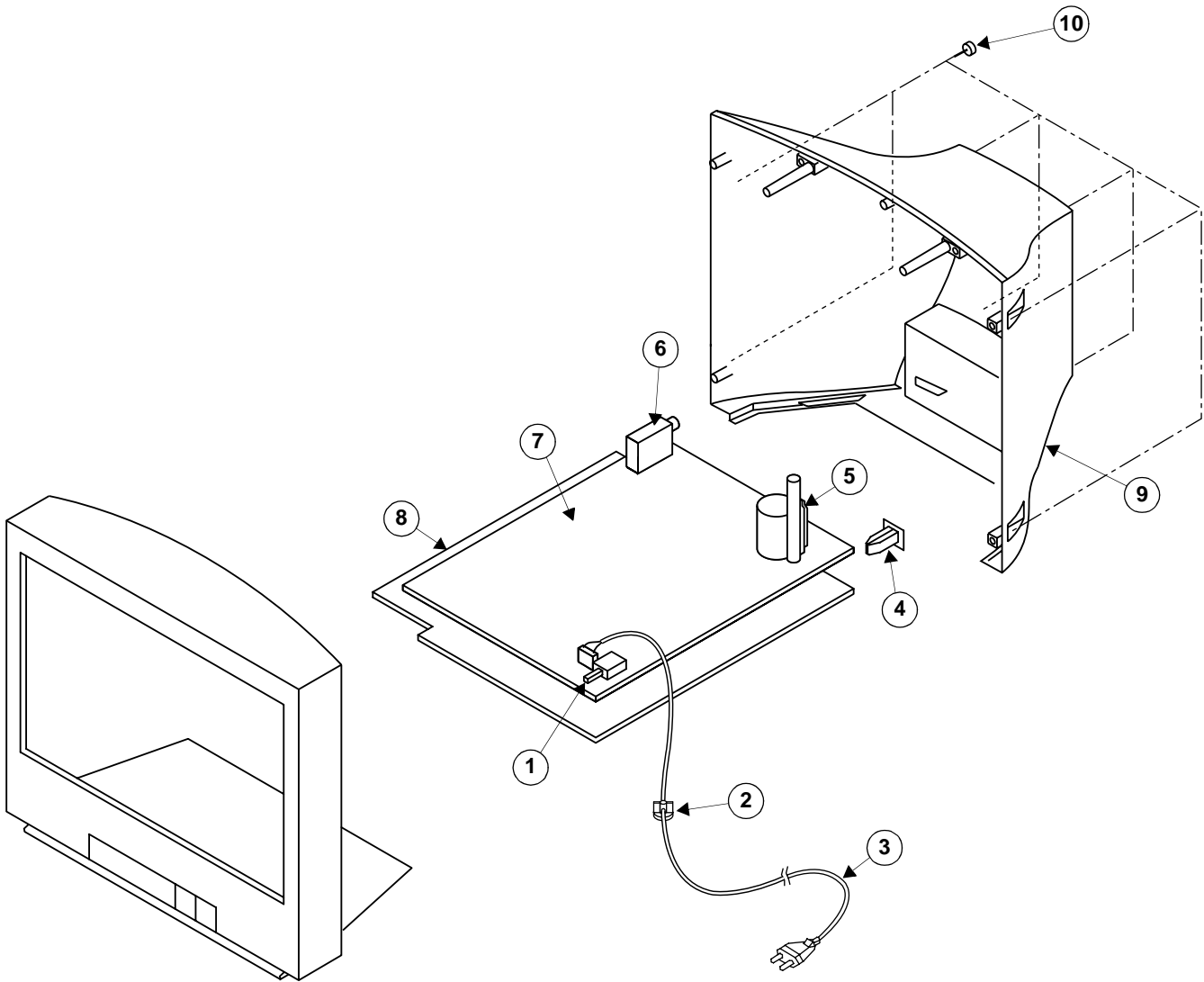
### NOTE :

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remarks column.
- Items marked “\*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

**Note :** Les composants identifiés par une trame et par une marque  $\Delta$  sont d'une importance critique pour la sécurité. Ne les remplacer que par des pièces du numéro spécifié.

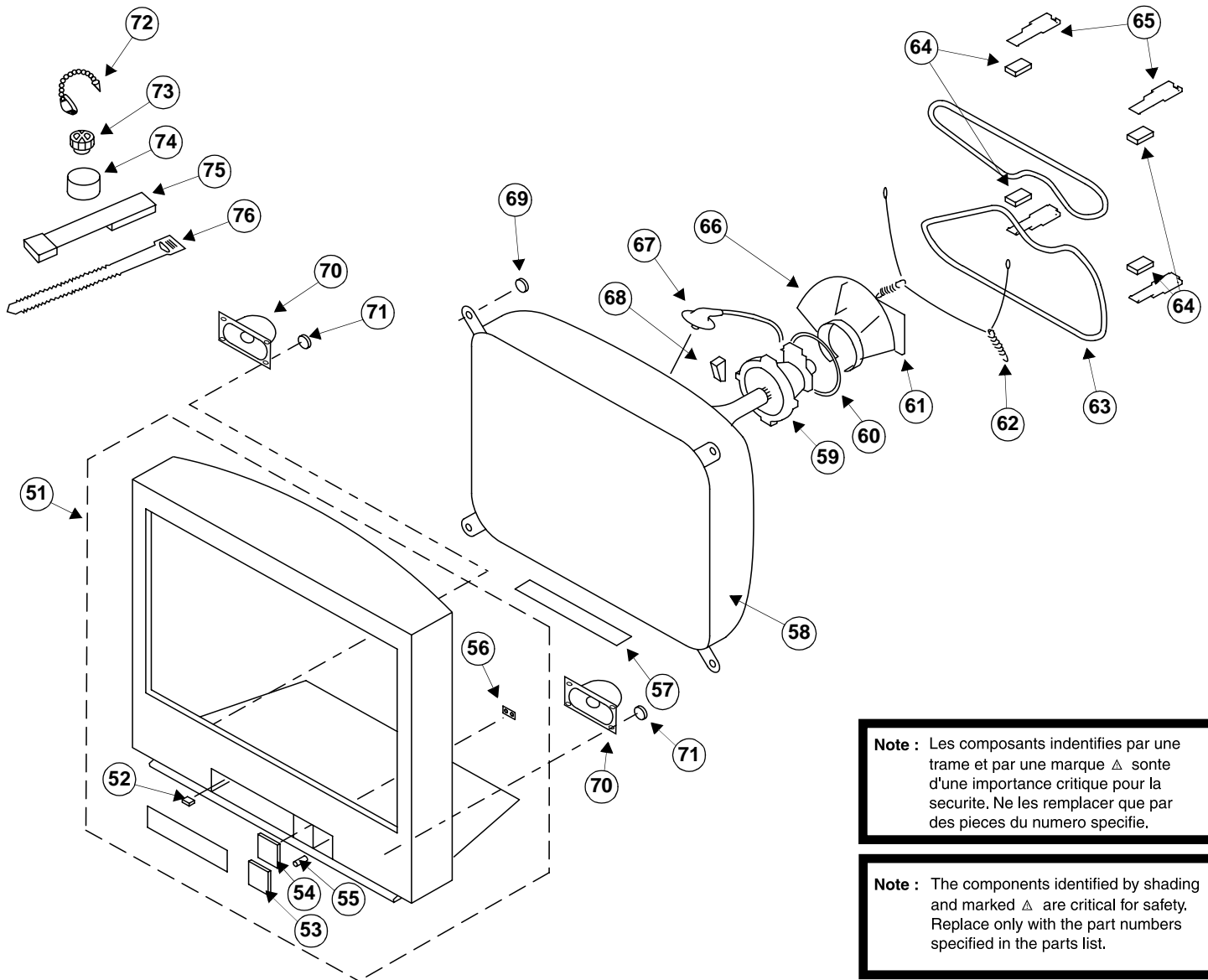
**Note :** The components identified by shading and marked  $\Delta$  are critical for safety. Replace only with the part numbers specified in the parts list.

### 6-3. KV-21FT2 CHASSIS



REF. NO.	PART.NO	DESCRIPTION	REMARK	REF. NO.	PART.NO	DESCRIPTION	REMARK
1	$\Delta$ 1-571-433-21	SWITCH, PUSH (AC POWER)		6	8-598-537-00	FRONTEND BTF-EP401	
2	*4-202-531-01	AC CORD LOCK (SC)		7	*A-1632-898-A	A BOARD, COMPLETE	
3	$\Delta$ 1-765-286-11	CORD, POWER		8	*4-204-143-11	BRACKET, MAIN	
4	*4-204-517-03	SUPPORT, FBT		9	4-205-399-01	REAR COVER	
5	$\Delta$ 1-453-345-11	TRANSFORMER ASSY, FLYBACK (NX1748//M3A4)		10	7-685-663-71	SCREW +BVTP 4X16 TYPE 2 IT-3	

## 6-4. KV-21FT2 PICTURE TUBE



REF. NO.	PART.NO	DESCRIPTION	REMARK	REF. NO.	PART.NO	DESCRIPTION	REMARK
51	X-4200-622-1	BEZNET ASSY (KV-21LT1)	52-56	64	4-203-390-11	CUSHION, DGC	
52	4-205-398-01	SPRING, DOOR		65	4-204-900-01	BAND, DGC	
53	4-205-396-11	BUTTON, POWER (BARE)		66	4-202-554 01	HOLDER, HV CABLE	
54	4-205-392-11	WINDOW ORNAMENTAL (BARE)		67	$\Delta$ 1-251-839-21	CAP ASSY, HIGH VOLTAGE	
55	4-204-426-01	SPRING		68	3-704-495-01	SPACER, DY	
56	4-205-389-01	GUIDE, LIGHT		69	4-365-808-01	SCREW (5), TAPPING	
57	4-204-666-01	SHEET, BLOTTING		70	1-529-710-11	SPEAKER, (5X9CM)	
58	$\Delta$ 8-738-836-05	PICTURE TUBE (A51LPT60X) (SD-313)		71	7-685-648-79	SCREW +BVTP 3X12 TYPE 2 IT-3	
59	$\Delta$ 8-451-505-11	DEFLECTION YOKE (Y21RSA-S)		72	4-308-870-00	CLIP, LEAD WIRE	
60	1-452-728-61	COIL, NA ROTATION (RT-154)		73	1-452-094-00	MAGNET, ROTATABLE DISK; 15MM $\varnothing$	
61	*A-1639-004-A	C BOARD, COMPLETE		74	1-452-032-00	MAGNET, DISK; 10MM $\varnothing$	
62	4-369-318-21	SPRING, TENSION		75	X-4387-214-1	PERMALLOY ASSY, CORRECTION	
63	$\Delta$ 1-419-187-11	COIL, DEGAUSSING		76	3-701-007-00	BAND, BINDING	

# SECTION 7

## ELECTRICAL PARTS LIST

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<b>A BOARD VARIANT Parts List :</b> Parts that belong only to the model specified	
<u>Model</u>	
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KV-21FT2 .....	53
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**Note :** Refer to the designated variant parts list when seeking a part indicated by an asterisk (\*)

Parts indicated (#) on the Schematic Diagram are not used in this model and therefore do not appear in the Parts List.



REF. NO.	PART.NO	DESCRIPTION	REMARK	REF. NO.	PART.NO	DESCRIPTION	REMARK
<b>*A-1632-893-A A Board, Complete (KV-21LT1B)</b> <b>*A-1632-880-A A Board, Complete (KV-21LT1E)</b> <b>*A-1632-892-A A Board, Complete (KV-21LT1K)</b> <b>*A-1632-894-A A Board, Complete (KV-21LT1U)</b> <b>*A-1632-898-A A Board, Complete (KV-21FT2K)</b>				C044	1-164-346-11	CERAMIC CHIP 1UF	16V
				C045	1-164-489-11	CERAMIC CHIP 0.22UF	10.00% 16V
				C046	1-163-037-11	CERAMIC CHIP 0.022UF	10.00% 50V
				C047	1-126-935-11	ELECT 470UF	20.00% 16V
				C051	1-163-109-00	CERAMIC CHIP 47PF	5.00% 50V
				C053	1-164-004-11	CERAMIC CHIP 0.1UF	10.00% 25V
				C055	1-216-295-91	SHORT 0	
				C100	1-126-933-11	ELECT 100UF	20.00% 16V
				C103	1-126-965-11	ELECT 22UF	20.00% 50V
				C105	1-163-021-91	CERAMIC CHIP 0.01UF	10.00% 50V
				C106	1-126-933-11	ELECT 100UF	20.00% 16V
				C110	1-163-113-00	CERAMIC CHIP 68PF	5.00% 50V
				C111	1-163-113-00	CERAMIC CHIP 68PF	5.00% 50V
				C253	1-164-336-11	CERAMIC CHIP 0.33UF	25V
				C403	1-163-009-11	CERAMIC CHIP 0.001UF	10.00% 50V
				C408	1-164-348-11	CERAMIC CHIP 0.12UF	10.00% 25V
				C409	1-126-964-11	ELECT 10UF	20.00% 50V
				C410	1-163-021-91	CERAMIC CHIP 0.01UF	10.00% 50V
				C415	1-164-346-11	CERAMIC CHIP 1UF	16V
				C416	1-126-964-11	ELECT 10UF	20.00% 50V
				C421	1-163-009-11	CERAMIC CHIP 0.001UF	10.00% 50V
				C426	1-163-009-11	CERAMIC CHIP 0.001UF	10.00% 50V
				C437	1-164-346-11	CERAMIC CHIP 1UF	16V
				C438	1-164-346-11	CERAMIC CHIP 1UF	16V
				C449	1-164-492-11	CERAMIC CHIP 0.15UF	10.00% 16V
				C501	1-126-968-11	ELECT 100UF	20.00% 50V
				C502	1-163-038-91	CERAMIC CHIP 0.1UF	25V
				C503	1-126-968-11	ELECT 100UF	20.00% 50V
				C504	1-106-220-00	MYLAR 0.1UF	10.00% 100V
				C505	1-137-194-81	MYLAR 0.47UF	5.00% 50V
				C506	1-163-021-91	CERAMIC CHIP 0.01UF	10.00% 50V
				C508	1-163-035-00	CERAMIC CHIP 0.047UF	50V
				C509	1-107-364-11	MYLAR 0.01UF	10.00% 400V
				C510	1-163-005-11	CERAMIC CHIP 470PF	10.00% 50V
				C513	1-128-560-11	ELECT 22UF	20.00% 100V
				C515	1-104-666-11	ELECT 220UF	20.00% 25V
				C517	1-104-666-11	ELECT 220UF	20.00% 25V
				C518	1-106-375-12	MYLAR 0.022UF	10.00% 250V
				C519	1-163-275-11	CERAMIC CHIP 0.001UF	5.00% 50V
				C520	1-163-038-91	CERAMIC CHIP 0.1UF	25V
				C524	1-216-295-91	SHORT 0	
				C525	1-123-024-21	ELECT 33UF	160V
				C531	1-126-964-11	ELECT 10UF	20.00% 50V
				C532	1-163-017-00	CERAMIC CHIP 0.0047UF	10.00% 50V
				C535	1-163-251-11	CERAMIC CHIP 100PF	5.00% 50V
				C536	1-117-667-11	FILM 0.47UF	5.00% 250V
				C537	1-106-351-00	MYLAR 0.0022UF	99% 200V
<b>A Board, Common Parts</b>  4-203-258-01 HOLDER, LED *4-374-846-01 COVER, CAPACITOR, CAP TYPE 4-382-854-01 SCREW (M3X8), P, SW (+) 4-382-854-01 SCREW (M3X8), P, SW (+)  < CAPACITOR >				C001	1-126-933-11	ELECT 100UF	20.00% 16V
				C002	1-163-233-11	CERAMIC CHIP 18PF	5.00% 50V
				C004	1-163-037-11	CERAMIC CHIP 0.022UF	10.00% 50V
				C005	1-126-935-11	ELECT 470UF	20.00% 16V
				C006	1-163-233-11	CERAMIC CHIP 18PF	5.00% 50V
				C007	1-163-037-11	CERAMIC CHIP 0.022UF	10.00% 50V
				C008	1-164-337-11	CERAMIC CHIP 2.2UF	16V
				C009	1-163-037-11	CERAMIC CHIP 0.022UF	10.00% 50V
				C010	1-164-005-11	CERAMIC CHIP 0.47UF	16V
				C011	1-163-005-11	CERAMIC CHIP 470PF	10.00% 50V
				C012	1-126-963-11	ELECT 4.7UF	20.00% 50V
				C013	1-163-021-91	CERAMIC CHIP 0.01UF	10.00% 50V
				C014	1-163-021-91	CERAMIC CHIP 0.01UF	10.00% 50V
				C015	1-163-021-91	CERAMIC CHIP 0.01UF	10.00% 50V
				C017	1-126-960-11	ELECT 1UF	20.00% 50V
				C018	1-163-021-91	CERAMIC CHIP 0.01UF	10.00% 50V
				C020	1-164-004-11	CERAMIC CHIP 0.1UF	10.00% 25V
				C021	1-163-037-11	CERAMIC CHIP 0.022UF	10.00% 50V
				C022	1-126-925-11	ELECT 470UF	20.00% 10V
				C024	1-126-961-11	ELECT 2.2UF	20.00% 50V
				C025	1-126-935-11	ELECT 470UF	20.00% 16V
				C026	1-163-009-11	CERAMIC CHIP 0.001UF	10.00% 50V
				C027	1-164-004-11	CERAMIC CHIP 0.1UF	10.00% 25V
				C028	1-163-009-11	CERAMIC CHIP 0.001UF	10.00% 50V
				C030	1-163-009-11	CERAMIC CHIP 0.001UF	10.00% 50V
				C032	1-163-021-91	CERAMIC CHIP 0.01UF	10.00% 50V
				C033	1-163-009-11	CERAMIC CHIP 0.001UF	10.00% 50V
				C035	1-163-009-11	CERAMIC CHIP 0.001UF	10.00% 50V
				C036	1-163-009-11	CERAMIC CHIP 0.001UF	10.00% 50V
				C037	1-137-354-11	FILM 0.01UF	5.00% 100V
				C038	1-163-037-11	CERAMIC CHIP 0.022UF	10.00% 50V
				C039	1-164-505-11	CERAMIC CHIP 2.2UF	16V
				C040	1-163-017-00	CERAMIC CHIP 0.0047UF	10.00% 50V
				C042	1-162-625-11	CERAMIC CHIP 0.0047UF	5.00% 50V
				C043	1-163-037-11	CERAMIC CHIP 0.022UF	10.00% 50V

REF. NO.	PART.NO	DESCRIPTION	REMARK
C538	1-165-319-11	CERAMIC CHIP 0.1UF	50V
C539	1-107-642-91	ELECT 3.3UF	20.00% 200V
C540	1-136-206-11	MYLAR 0.033UF	10.00% 400V
C541	1-106-383-00	MYLAR 0.047UF	10.00% 200V
C542	1-162-131-11	CERAMIC 220PF	10.00% 2KV
C545	1-164-004-11	CERAMIC CHIP 0.1UF	10.00% 25V
C546	1-135-840-51	FILM 0.036UF	3% 400V
C547	1-117-671-21	FILM 1UF	5.00% 250V
C550	1-107-638-11	ELECT 33UF	20.00% 160V
C552	1-102-212-00	CERAMIC 820PF	10.00% 500V
C555	1-117-644-31	FILM 10000PF	3.00% 1.2KV
C580	1-163-021-91	CERAMIC CHIP 0.01UF	10.00% 50V
C582	1-163-255-11	CERAMIC CHIP 150PF	5.00% 50V
C583	1-163-009-11	CERAMIC CHIP 0.001UF	10.00% 50V
C600	1-119-888-51	CERAMIC 2200PF	20.00% 250V
C601	$\Delta$ 1-136-516-12	FILM 0.1UF	20.00% 300V
C602	$\Delta$ 1-136-516-12	FILM 0.1UF	20.00% 300V
C603	$\Delta$ 1-119-888-51	CERAMIC 2200PF	20.00% 250V
C604	$\Delta$ 1-119-888-51	CERAMIC 2200PF	20.00% 250V
C605	1-126-935-11	ELECT 470UF	20.00% 16V
C606	1-125-991-11	ELECT 180UF	20% 450V
C607	1-126-964-11	ELECT 10UF	20.00% 50V
C608	1-126-963-11	ELECT 4.7UF	20.00% 50V
C610	1-126-941-11	ELECT 470UF	20.00% 25V
C611	1-163-009-11	CERAMIC CHIP 0.001UF	10.00% 50V
C612	$\Delta$ 1-104-571-91	CERAMIC 0.0015UF	10.00% 2KV
C613	$\Delta$ 1-104-571-91	CERAMIC 0.0015UF	10.00% 2KV
C614	$\Delta$ 1-161-964-51	CERAMIC 0.0047UF	250V
C615	1-115-339-11	CERAMIC CHIP 0.1UF	10.00% 50V
C617	1-164-644-11	CERAMIC 330PF	10.00% 500V
C618	1-126-949-11	ELECT 220UF	20.00% 35V
C619	1-164-644-11	CERAMIC 330PF	10.00% 500V
C620	1-135-871-21	FILM 15000PF	3% 800V
C621	1-164-644-11	CERAMIC 330PF	10.00% 500V
C622	$\Delta$ 1-104-571-91	CERAMIC 0.0015UF	10.00% 2KV
C623	$\Delta$ 1-104-571-91	CERAMIC 0.0015UF	10.00% 2KV
C624	1-126-935-11	ELECT 470UF	20.00% 16V
C625	$\Delta$ 1-117-703-11	CERAMIC 0.0047UF	99% 250V
C626	1-126-967-11	ELECT 47UF	20.00% 50V
C627	1-126-964-11	ELECT 10UF	20.00% 50V
C628	1-126-963-11	ELECT 4.7UF	20.00% 50V
C630	1-107-640-41	ELECT 100UF	20.00% 160V
C631	1-126-942-61	ELECT 1000UF	20.00% 25V
C632	1-126-964-11	ELECT 10UF	20.00% 50V
C633	1-163-009-11	CERAMIC CHIP 0.001UF	10.00% 50V
C635	1-136-165-00	MYLAR 0.1UF	5.00% 50V
C636	1-136-479-11	FILM 0.001UF	2.00% 50V

REF. NO.	PART.NO	DESCRIPTION	REMARK
C637	1-126-967-11	ELECT 47UF	20.00% 50V
C638	1-107-679-91	ELECT 10UF	20.00% 450V
C639	1-104-665-11	ELECT 100UF	20.00% 25V
C640	1-104-664-11	ELECT 47UF	20.00% 25V
C641	1-111-036-11	ELECT 470UF	20.00% 16V
C642	1-104-665-11	ELECT 100UF	20.00% 25V
C643	1-164-644-11	CERAMIC 330PF	10.00% 500V
C645	1-164-004-11	CERAMIC CHIP 0.1UF	10.00% 25V
C648	1-125-782-91	CERAMIC 4700PF	10.00% 1KV
C657	1-126-952-11	ELECT 1000UF	20.00% 35V
C1201	1-126-952-11	ELECT 1000UF	20.00% 35V
C1205	1-163-033-91	CERAMIC CHIP 0.022UF	50V
C1207	1-115-340-11	CERAMIC CHIP 0.22UF	10.00% 25V
C1208	1-535-143-61	LEAD, JUMPER (5.0MM)	
C1218	1-109-982-11	CERAMIC CHIP 1UF	10.00% 10V
C1219	1-104-666-11	ELECT 220UF	20.00% 25V
C1220	1-164-346-11	CERAMIC CHIP 1UF	16V
C1221	1-115-339-11	CERAMIC CHIP 0.1UF	10.00% 50V
C1223	1-163-125-00	CERAMIC CHIP 220PF	5.00% 50V
C1226	1-110-501-11	CERAMIC CHIP 0.33UF	10.00% 16V
C1227	1-163-125-00	CERAMIC CHIP 220PF	5.00% 50V
< CONNECTOR >			
CN001	*1-564-508-11	PLUG, CONNECTOR 5P	
CN501	*1-580-798-11	CONNECTOR PIN (DY)	
CN504	*1-564-509-11	PLUG, CONNECTOR 6P	
CN506	1-695-915-11	TAB (CONTACT)	
CN508	*1-564-508-11	PLUG, CONNECTOR 5P	
CN510	*1-564-506-11	PLUG, CONNECTOR 3P	
CN601	$\Delta$ *1-580-843-11	PIN, CONNECTOR (POWER)	
CN602	$\Delta$ 1-508-765-00	PIN, CONNECTOR (5MM PITCH) 3P	
CN603	$\Delta$ *1-508-786-00	PIN, CONNECTOR (5MM PITCH) 2P	
CN604	$\Delta$ 1-695-915-11	TAB (CONTACT)	
< DIODE >			
D001	8-719-069-55	DIODE UDZS-TE17-5.6B	
D002	8-719-069-55	DIODE UDZS-TE17-5.6B	
D003	8-719-109-69	DIODE MTZJ-T-77-3.6B	
D004	8-719-302-45	DIODE SEL1210S-D	
D005	8-719-110-08	DIODE MTZJ-T-77-8.2B	
D006	8-719-109-89	DIODE MTZJ-T-77-5.6B	
D007	8-719-069-55	DIODE UDZS-TE17-5.6B	
D008	8-719-074-43	DIODE BAS316-115	
D010	8-719-074-43	DIODE BAS316-115	
D011	8-719-074-43	DIODE BAS316-115	
D012	8-719-110-08	DIODE MTZJ-T-77-8.2B	
D013	8-719-109-69	DIODE MTZJ-T-77-3.6B	

The components identified by shading and marked  $\Delta$  are critical for safety  
Replace only with the part number specified.

A

REF. NO.	PART.NO	DESCRIPTION	REMARK	REF. NO.	PART.NO	DESCRIPTION	REMARK
D014	8-719-422-12	DIODE UDZ-TE-17-3.9B		D601	8-719-510-53	DIODE D4SB60L-F	
D016	8-719-109-89	DIODE MTZJ-T-77-5.6B		D602	8-719-911-19	DIODE 1SS119-25TD	
D017	8-719-109-97	DIODE MTZJ-T-77-6.8B		D604	8-719-979-64	DIODE UF4005PKG23	
D018	8-719-109-69	DIODE MTZJ-T-77-3.6B		D608	8-719-063-70	DIODE D1NL20U-TA2	
D019	8-719-109-97	DIODE MTZJ-T-77-6.8B		D610	8-719-110-41	DIODE RD15ES-T1B2	
D020	8-719-109-89	DIODE MTZJ-T-77-5.6B		D611	8-719-991-33	DIODE 1SS133T-77	
D035	8-719-069-55	DIODE UDZS-TE17-5.6B		D612	8-719-991-33	DIODE 1SS133T-77	
D036	8-719-069-55	DIODE UDZS-TE17-5.6B		D613	8-719-911-19	DIODE 1SS119-25TD	
D051	8-719-978-33	DIODE UDZS-TE17-6.8B		D614	8-719-077-76	DIODE D2SB60A-F04	
D101	8-719-977-81	DIODE MA8330-TX		D615	8-719-110-08	DIODE MTZJ-T-77-8.2B	
D103	8-719-978-33	DIODE UDZS-TE17-6.8B		D616	8-719-052-90	DIODE D1NL40-TA2	
D104	8-719-069-55	DIODE UDZS-TE17-5.6B		D617	8-719-052-90	DIODE D1NL40-TA2	
D210	8-719-069-55	DIODE UDZS-TE17-5.6B		D618	8-719-022-97	DIODE D2S4MTA1	
D211	8-719-069-60	DIODE UDZS-TE17-9.1B		D619	8-719-022-97	DIODE D2S4MTA1	
D212	8-719-914-43	DIODE DAN202K-T-146		D620	8-719-109-85	DIODE MTZJ-T-77-5.1B	
D402	8-719-978-33	DIODE UDZS-TE17-6.8B		D621	8-719-109-89	DIODE MTZJ-T-77-5.6B	
D404	8-719-109-89	DIODE MTZJ-T-77-5.6B		D623	8-719-911-19	DIODE 1SS119-25TD	
D405	8-719-978-33	DIODE UDZS-TE17-6.8B		D627	8-719-063-70	DIODE D1NL20-TA	
D406	8-719-978-33	DIODE UDZS-TE17-6.8B		D629	8-719-073-23	DIODE ST02D-200TA	
D407	8-719-978-33	DIODE UDZS-TE17-6.8B		D631	8-719-921-63	DIODE MTZJ-T-77-7.5B	
D408	8-719-978-33	DIODE UDZS-TE17-6.8B		D632	8-719-063-70	DIODE D1NL20U-TA2	
D412	8-719-978-33	DIODE UDZS-TE17-6.8B		D633	8-719-109-69	DIODE MTZJ-T-77-3.6B	
D414	8-719-978-33	DIODE UDZS-TE17-6.8B		D634	8-719-074-43	DIODE BAS316-115	
D420	8-719-978-33	DIODE UDZS-TE17-6.8B		D639	8-719-080-59	DIODE EK19-V0	
D421	8-719-049-26	DIODE RB721QT-77		D640	8-719-921-63	DIODE MTZJ-T-77-7.5B	
D423	8-719-978-33	DIODE UDZS-TE17-6.8B		D1201	8-719-069-55	DIODE UDZS-TE17-5.6B	
D424	8-719-069-60	DIODE UDZS-TE17-9.1B		D1203	8-719-914-43	DIODE DAN202K-T-146	
D435	8-719-069-60	DIODE UDZS-TE17-9.1B		D1204	8-719-069-55	DIODE UDZS-TE17-5.6B	
D436	8-719-069-60	DIODE UDZS-TE17-9.1B				< FUSE >	
D501	8-719-908-03	DIODE GP08DPKG23					
D502	8-719-056-95	DIODE UDZ-TE-17-22B		F601	$\Delta$ 1-576-232-21	FUSE (H.B.C.) 5A/250V	
D503	8-719-069-55	DIODE UDZS-TE17-5.6B			$\Delta$ *1-533-725-11	HOLDER, FUSE (F601)	
D504	8-719-074-43	DIODE BAS316-115				< FERRITE BEAD >	
D505	8-719-988-61	DIODE 1SS355TE-17					
D506	8-719-908-03	DIODE GP08DPKG23		FB601	1-410-397-21	FERRITE	1.1UH
D507	8-719-070-59	DIODE PDZ6.8B-115		FB604	1-410-397-21	FERRITE	1.1UH
D512	8-719-908-03	DIODE GP08DPKG23		FB605	1-410-397-21	FERRITE	1.1UH
D513	8-719-908-03	DIODE GP08DPKG23		FB606	1-412-911-11	FERRITE	0UH
D514	8-719-908-03	DIODE GP08DPKG23		FB607	1-412-911-11	FERRITE	0UH
D534	8-719-908-03	DIODE GP08DPKG23				< IC >	
D535	8-719-908-03	DIODE GP08DPKG23		IC001	8-759-671-88	IC TDA9392H/N1/4/0131/T3	
D536	8-719-945-80	DIODE ERC06-15SL		IC002	8-749-017-44	IC TSOP1540SE1	
D537	8-719-110-14	DIODE MTZJ-T-77-9.1C		IC003	8-759-672-39	IC PST573IMT	
D538	8-719-908-03	DIODE GP08DPKG23		IC004	8-759-575-72	IC M24C08-WMN6T	
D539	8-719-928-08	DIODE ERD28-06S		IC401	8-759-665-11	IC LM393DT	
D541	1-535-143-61	LEAD, JUMPER (5.0MM)		IC501	8-759-339-59	IC TDA8177	
D573	8-719-976-96	DIODE UDZ-TE-17-4.7B					

REF. NO.	PART.NO	DESCRIPTION	REMARK	REF. NO.	PART.NO	DESCRIPTION	REMARK
IC531	8-759-665-11	IC LM393DT		Q401	8-729-026-49	TRANSISTOR 2SA1037AK-T146-QR	
IC601	8-759-671-30	IC MCZ3001D		Q411	8-729-120-28	TRANSISTOR 2SC2412K-T-146-R	
IC602	8-749-016-19	IC SE135N-LF4		Q532	8-729-053-33	TRANSISTOR IRF614-037	
IC604	8-759-668-87	IC BA41W12ST-V5		Q533	8-729-051-82	TRANSISTOR BU4508DX-ON5210	
IC608	8-759-591-02	IC L78L33ABZ-AP		Q535	8-729-053-33	TRANSISTOR IRF614-037	
IC609	8-759-468-89	IC TOP209P		Q601	8-729-026-49	TRANSISTOR 2SA1037AK-T146-QR	
IC1201	8-759-665-29	IC TDA7494S		Q602	8-729-119-78	TRANSISTOR 2SC1740S-RT	
< SOCKET >				Q603	8-729-029-56	TRANSISTOR DTA144ESA-TP	
J401	1-770-130-11	CONNECTOR (SQUARE TYPE) 21P		Q604	8-729-030-02	TRANSISTOR DTC144ESA-TP	
J402	1-794-344-11	JACK, PIN 2P		Q606	8-729-052-29	TRANSISTOR 2SK2876-01MR-F122	
J1200	1-568-267-21	JACK		Q607	8-729-052-29	TRANSISTOR 2SK2876-01MR-F122	
< COIL >				Q608	8-729-120-28	TRANSISTOR 2SC2412K-T-146-QR	
L001	1-408-611-31	INDUCTOR	47UH	Q609	8-729-026-49	TRANSISTOR 2SA1037AK-T146-QR	
L002	1-410-119-11	INDUCTOR	1MH	< RESISTOR >			
L004	1-408-611-31	INDUCTOR	47UH	JR002	1-216-295-91	SHORT	0
L006	1-408-611-31	INDUCTOR	47UH	JR009	1-216-295-91	SHORT	0
L027	1-216-295-91	SHORT	0	JR023	1-216-295-91	SHORT	0
L101	1-412-533-21	INDUCTOR	47UH	JR208	1-216-295-91	SHORT	0
L102	1-408-611-31	INDUCTOR	47UH	JR403	1-216-295-91	SHORT	0
L405	1-535-143-61	LEAD, JUMPER (5.0MM)		JR404	1-216-295-91	SHORT	0
L407	1-535-143-61	LEAD, JUMPER (5.0MM)		JR406	1-216-295-91	SHORT	0
L410	1-216-025-91	RES-CHIP	100 5% 1/10W	JR408	1-216-296-91	SHORT	0
L446	1-216-295-91	SHORT	0	JR409	1-216-295-91	SHORT	0
L501	1-414-187-11	INDUCTOR	47UH	JR420	1-216-295-91	SHORT	0
L502	1-412-531-31	INDUCTOR	33UH	JR508	1-216-295-91	SHORT	0
L503	1-412-521-31	INDUCTOR	4.7UH	JR516	1-216-296-91	SHORT	0
L504	1-535-143-61	LEAD, JUMPER (5.0MM)		JR517	1-216-296-91	SHORT	0
L505	1-412-533-21	INDUCTOR	47UH	JR601	1-216-296-91	SHORT	0
L507	1-412-533-21	INDUCTOR	47UH	R003	1-216-065-91	RES-CHIP	4.7K 5% 1/10W
L532	1-412-553-11	INDUCTOR	3.3MH	R004	1-216-033-00	RES-CHIP	220 5% 1/10W
L533	1-406-989-21	INDUCTOR	10MH	R005	1-216-190-00	RES-CHIP	470 5% 1/8W
L535	1-459-111-00	INDUCTOR	10MH	R006	1-216-025-91	RES-CHIP	100 5% 1/10W
L537	1-419-552-11	COIL, HORIZONTAL LINEARITY		R007	1-216-025-91	RES-CHIP	100 5% 1/10W
L538	1-419-263-11	COIL, WITH CORE		R008	1-216-025-91	RES-CHIP	100 5% 1/10W
L601	1-408-603-31	INDUCTOR	10UH	R009	1-216-049-91	RES-CHIP	1K 5% 1/10W
L602	1-408-611-31	INDUCTOR	47UH	R010	1-216-059-00	RES-CHIP	2.7K 5% 1/10W
L1203	1-535-143-61	LEAD, JUMPER (5.0MM)		R011	1-216-295-91	SHORT	0
< PHOTO COUPLER >				R012	1-216-113-00	RES-CHIP	470K 5% 1/10W
PH601 $\Delta$	8-749-016-21	IC TCET1103G		R014	1-216-065-91	RES-CHIP	4.7K 5% 1/10W
< TRANSISTOR >				R017	1-216-174-00	RES-CHIP	100 5% 1/8W
Q013	8-729-120-28	TRANSISTOR 2SC2412K-T-146-R		R018	1-216-689-11	METAL CHIP	39K 0.5% 1/10W
Q016	8-729-120-28	TRANSISTOR 2SC2412K-T-146-R		R020	1-216-077-91	RES-CHIP	15K 5% 1/10W
Q212	8-729-422-33	TRANSISTOR 2PD601AR-115		R021	1-216-065-91	RES-CHIP	4.7K 5% 1/10W
				R022	1-216-089-91	RES-CHIP	47K 5% 1/10W
				R023	1-216-180-00	RES-CHIP	180 5% 1/8W
				R024	1-216-025-91	RES-CHIP	100 5% 1/10W

REF. NO.	PART.NO	DESCRIPTION	REMARK	REF. NO.	PART.NO	DESCRIPTION	REMARK
R025	1-216-025-91	RES-CHIP	100 5% 1/10W	R096	1-216-025-91	RES-CHIP	100 5% 1/10W
R026	1-216-025-91	RES-CHIP	100 5% 1/10W	R101	1-216-093-91	RES-CHIP	68K 5% 1/10W
R027	1-216-025-91	RES-CHIP	100 5% 1/10W	R102	1-216-097-91	RES-CHIP	100K 5% 1/10W
R028	1-216-025-91	RES-CHIP	100 5% 1/10W	R104	1-216-295-91	SHORT	0
R029	1-216-061-00	RES-CHIP	3.3K 5% 1/10W	R106	1-215-900-11	METAL OXIDE	22K 5% 2W
R031	1-216-210-00	RES-CHIP	3.3K 5% 1/8W	R107	1-216-025-91	RES-CHIP	100 5% 1/10W
R032	1-216-061-00	RES-CHIP	3.3K 5% 1/10W	R108	1-216-025-91	RES-CHIP	100 5% 1/10W
R033	1-216-073-00	RES-CHIP	10K 5% 1/10W	R246	1-260-107-11	CARBON	4.7K 5% 1/2W
R034	1-216-121-91	RES-CHIP	1M 5% 1/10W	R248	1-249-429-11	CARBON	10K 5% 1/4W
R035	1-216-101-00	RES-CHIP	150K 5% 1/10W	R249	1-216-097-91	RES-CHIP	100K 5% 1/10W
R036	1-216-083-00	RES-CHIP	27K 5% 1/10W	R250	1-216-230-00	RES-CHIP	22K 5% 1/8W
R038	1-216-295-91	SHORT	0	R401	1-216-214-00	RES-CHIP	4.7K 5% 1/8W
R039	1-216-214-00	RES-CHIP	4.7K 5% 1/8W	R404	1-216-113-00	RES-CHIP	470K 5% 1/10W
R040	1-216-049-91	RES-CHIP	1K 5% 1/10W	R406	1-216-214-00	RES-CHIP	4.7K 5% 1/8W
R041	1-216-025-91	RES-CHIP	100 5% 1/10W	R408	1-216-022-00	RES-CHIP	75 5% 1/10W
R042	1-216-025-91	RES-CHIP	100 5% 1/10W	R409	1-216-025-91	RES-CHIP	100 5% 1/10W
R044	1-216-073-00	RES-CHIP	10K 5% 1/10W	R410	1-216-025-91	RES-CHIP	100 5% 1/10W
R045	1-216-025-91	RES-CHIP	100 5% 1/10W	R411	1-216-022-00	RES-CHIP	75 5% 1/10W
R046	1-216-025-91	RES-CHIP	100 5% 1/10W	R412	1-216-025-91	RES-CHIP	100 5% 1/10W
R047	1-216-025-91	RES-CHIP	100 5% 1/10W	R414	1-216-022-00	RES-CHIP	75 5% 1/10W
R048	1-216-073-00	RES-CHIP	10K 5% 1/10W	R415	1-216-022-00	RES-CHIP	75 5% 1/10W
R050	1-216-174-00	RES-CHIP	100 5% 1/8W	R416	1-216-027-00	RES-CHIP	120 5% 1/10W
R051	1-216-295-91	SHORT	0	R419	1-216-022-00	RES-CHIP	75 5% 1/10W
R055	1-216-174-00	RES-CHIP	100 5% 1/8W	R420	1-216-073-00	RES-CHIP	10K 5% 1/10W
R056	1-216-081-00	RES-CHIP	22K 5% 1/10W	R421	1-216-049-91	RES-CHIP	1K 5% 1/10W
R057	1-216-083-00	RES-CHIP	27K 5% 1/10W	R423	1-216-113-00	RES-CHIP	470K 5% 1/10W
R060	1-216-174-00	RES-CHIP	100 5% 1/8W	R425	1-216-085-00	RES-CHIP	33K 5% 1/10W
R061	1-216-174-00	RES-CHIP	100 5% 1/8W	R426	1-216-073-00	RES-CHIP	10K 5% 1/10W
R062	1-216-077-91	RES-CHIP	15K 5% 1/10W	R428	1-216-073-00	RES-CHIP	10K 5% 1/10W
R063	1-216-061-00	RES-CHIP	3.3K 5% 1/10W	R429	1-216-089-91	RES-CHIP	47K 5% 1/10W
R064	1-216-069-00	RES-CHIP	6.8K 5% 1/10W	R430	1-216-073-00	RES-CHIP	10K 5% 1/10W
R065	1-216-295-91	SHORT	0	R431	1-216-073-00	RES-CHIP	10K 5% 1/10W
R066	1-216-053-00	RES-CHIP	1.5K 5% 1/10W	R433	1-216-073-00	RES-CHIP	10K 5% 1/10W
R067	1-216-073-00	RES-CHIP	10K 5% 1/10W	R434	1-216-073-00	RES-CHIP	10K 5% 1/10W
R068	1-216-083-00	RES-CHIP	27K 5% 1/10W	R435	1-216-295-91	SHORT	0
R069	1-216-073-00	RES-CHIP	10K 5% 1/10W	R440	1-216-049-91	RES-CHIP	1K 5% 1/10W
R070	1-216-025-91	RES-CHIP	100 5% 1/10W	R441	1-216-051-00	RES-CHIP	1.2K 5% 1/10W
R071	1-216-049-91	RES-CHIP	1K 5% 1/10W	R444	1-216-061-00	RES-CHIP	3.3K 5% 1/10W
R072	1-216-295-91	SHORT	0	R445	1-216-022-00	RES-CHIP	75 5% 1/10W
R074	1-216-073-00	RES-CHIP	10K 5% 1/10W	R446	1-216-113-00	RES-CHIP	470K 5% 1/10W
R075	1-216-295-91	SHORT	0	R447	1-216-295-91	SHORT	0
R089	1-216-081-00	RES-CHIP	22K 5% 1/10W	R453	1-216-171-00	RES-CHIP	75 5% 1/8W
R090	1-216-057-00	RES-CHIP	2.2K 5% 1/10W	R454	1-216-001-00	RES-CHIP	10 5% 1/10W
R092	1-216-073-00	RES-CHIP	10K 5% 1/10W	R461	1-216-022-00	RES-CHIP	75 5% 1/10W
R093	1-216-081-00	RES-CHIP	22K 5% 1/10W	R501	1-216-091-00	RES-CHIP	56K 5% 1/10W
R094	1-216-025-91	RES-CHIP	100 5% 1/10W	R502	1-216-073-00	RES-CHIP	10K 5% 1/10W
R095	1-216-065-91	RES-CHIP	4.7K 5% 1/10W	R503	1-215-888-00	METAL OXIDE	220 5% 2W

REF. NO.	PART.NO	DESCRIPTION	REMARK			REF. NO.	PART.NO	DESCRIPTION	REMARK		
R504	1-249-385-11	CARBON	2.2	5%	1/4W	R562	1-216-117-00	RES-CHIP	680K	5%	1/10W
R505	1-216-677-11	METAL CHIP	12K	0.5%	1/10W	R565	1-216-049-91	RES-CHIP	1K	5%	1/10W
R506	1-216-665-11	METAL CHIP	3.9K	0.5%	1/10W	R583	1-216-081-00	RES-CHIP	22K	5%	1/10W
R507	1-216-349-00	METAL OXIDE	1	5%	1W	R589	1-216-295-91	SHORT	0		
R508	1-216-677-11	METAL CHIP	12K	0.5%	1/10W	R590	1-216-222-00	RES-CHIP	10K	5%	1/8W
R509	1-216-665-11	METAL CHIP	3.9K	0.5%	1/10W	R591	1-215-892-11	METAL OXIDE	1K	5%	2W
R510	1-216-113-00	RES-CHIP	470K	5%	1/10W	R595	1-249-377-11	CARBON	0.47	5%	1/4W
R512	1-249-382-11	CARBON	1.2	5%	1/4W	R600	1-216-615-91	METAL CHIP	33	0.5%	1/10W
R514	1-249-377-11	CARBON	0.47	5%	1/4W	R601	1-216-645-11	METAL CHIP	560	0.5%	1/10W
R515	1-249-377-11	CARBON	0.47	5%	1/4W	R602	1-202-962-11	CEMENTED	3.3	5%	10W
R516	1-214-907-00	METAL	56K	1%	1/2W	R603	1-220-926-11	FUSIBLE	0.47	10%	1/2W
R517	1-215-463-00	METAL	56K	1%	1/4W	R605	1-216-049-91	RES-CHIP	1K	5%	1/10W
R518	1-216-059-00	RES-CHIP	2.7K	5%	1/10W	R606 $\Delta$	1-202-719-00	SOLID	1M	10%	1/2W
R519	1-216-129-00	RES-CHIP	2.2M	5%	1/10W	R608	1-216-073-00	RES-CHIP	10K	5%	1/10W
R520	1-215-883-11	METAL OXIDE	33	5%	2W	R609	1-216-675-91	METAL CHIP	10K	0.5%	1/10W
R523	1-216-117-00	RES-CHIP	680K	5%	1/10W	R610	1-215-481-00	METAL	330K	1%	1/4W
R524	1-216-083-00	RES-CHIP	27K	5%	1/10W	R611	1-216-059-00	RES-CHIP	2.7K	5%	1/10W
R525	1-216-057-00	RES-CHIP	2.2K	5%	1/10W	R612	1-249-429-11	CARBON	10K	5%	1/4W
R526	1-216-089-91	RES-CHIP	47K	5%	1/10W	R613 $\Delta$	1-218-265-11	METAL	8.2M	5%	1W
R527	1-216-079-00	RES-CHIP	18K	5%	1/10W	R615	1-215-405-00	METAL	220	1%	1/4W
R528	1-216-097-91	RES-CHIP	100K	5%	1/10W	R618	1-247-889-00	CARBON	270K	5%	1/4W
R529	1-216-073-00	RES-CHIP	10K	5%	1/10W	R619	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R530	1-216-085-00	RES-CHIP	33K	5%	1/10W	R621	1-216-113-00	RES-CHIP	470K	5%	1/10W
R531	1-216-057-00	RES-CHIP	2.2K	5%	1/10W	R622	1-216-073-00	RES-CHIP	10K	5%	1/10W
R532	1-216-085-00	RES-CHIP	33K	5%	1/10W	R623	1-216-081-00	RES-CHIP	22K	5%	1/10W
R533	1-216-081-00	RES-CHIP	22K	5%	1/10W	R624	1-216-001-00	RES-CHIP	10	5%	1/10W
R534	1-216-117-00	RES-CHIP	680K	5%	1/10W	R625	1-216-073-00	RES-CHIP	10K	5%	1/10W
R535	1-216-097-91	RES-CHIP	100K	5%	1/10W	R627	1-249-389-11	CARBON	4.7	5%	1/4W
R539	1-215-892-11	METAL OXIDE	1K	5%	2W	R628	1-247-791-91	CARBON	22	5%	1/4W
R540	1-215-887-00	METAL OXIDE	150	5%	2W	R629	1-216-073-00	RES-CHIP	10K	5%	1/10W
R542	1-216-121-91	RES-CHIP	1M	5%	1/10W	R632	1-249-417-11	CARBON	1K	5%	1/4W
R543	1-216-065-91	RES-CHIP	4.7K	5%	1/10W	R633	1-215-481-00	METAL	330K	1%	1/4W
R544	1-216-103-00	RES-CHIP	180K	5%	1/10W	R634	1-216-361-21	METAL OXIDE	0.22	5%	2W
R545	1-216-129-00	RES-CHIP	2.2M	5%	1/10W	R635	1-260-300-11	CARBON	4.7	5%	1/2W
R546	1-215-894-11	METAL OXIDE	2.2K	5%	2W	R636	1-249-413-11	CARBON	470	5%	1/4W
R547	1-215-886-11	METAL OXIDE	100	5%	2W	R637	1-216-041-00	RES-CHIP	470	5%	1/10W
R548	1-212-849-00	FUSIBLE	4.7	5%	1/4W	R639	1-216-683-11	METAL CHIP	22K	0.5%	1/10W
R549	1-216-369-00	METAL OXIDE	1	5%	2W	R640	1-216-699-91	METAL CHIP	100K	0.5%	1/10W
R551	1-215-873-00	METAL OXIDE	4.7K	5%	1W	R641	1-216-097-91	RES-CHIP	100K	5%	1/10W
R552	1-216-097-91	RES-CHIP	100K	5%	1/10W	R642	1-249-405-11	CARBON	100	5%	1/4W
R553	1-249-381-11	CARBON	1	5%	1/4W	R643	1-216-089-91	RES-CHIP	47K	5%	1/10W
R554	1-216-254-00	RES-CHIP	220K	5%	1/8W	R645	1-216-073-00	RES-CHIP	10K	5%	1/10W
R557	1-216-065-91	RES-CHIP	4.7K	5%	1/10W	R647	1-216-049-91	RES-CHIP	1K	5%	1/10W
R558	1-216-025-91	RES-CHIP	100	5%	1/10W	R648	1-215-481-00	METAL	330K	1%	1/4W
R559	1-249-428-11	CARBON	8.2K	5%	1/4W	R649	1-216-674-11	METAL CHIP	9.1K	0.5%	1/10W
R560	1-249-429-11	CARBON	10K	5%	1/4W	R650	1-216-627-11	METAL CHIP	100	0.5%	1/10W
R561	1-216-129-00	RES-CHIP	2.2M	5%	1/10W	R651	1-220-926-11	FUSIBLE	0.47	10%	1/2W

The components identified by shading and marked  $\Delta$  are critical for safety  
Replace only with the part number specified.

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REF. NO.	PART.NO	DESCRIPTION	REMARK	REF. NO.	PART.NO	DESCRIPTION	REMARK
R652	1-216-081-00	RES-CHIP	22K 5% 1/10W	<b>A Board Variant Parts KV-21LT1B/21LT1E KV-21LT1K/21LT1U</b>			
R653	1-216-073-00	RES-CHIP	10K 5% 1/10W	< CAPACITOR >			
R654	1-216-001-00	RES-CHIP	10 5% 1/10W	C1203	1-126-942-61	ELECT 1000UF	20.00% 25V
R656	1-216-365-00	METAL OXIDE	0.47 5% 2W	< CONNECTOR >			
R660	1-247-807-31	CARBON	100 5% 1/4W	CN1201	1-504-506-11	PLUG, CONNECTOR 3P	
R1200	1-260-093-11	CARBON	330 5% 1/2W	< COIL >			
R1201	1-260-093-11	CARBON	330 5% 1/2W	L603	1-412-519-11	INDUCTOR 3.3UH	
R1204	1-216-049-91	RES-CHIP	1K 5% 1/10W	L1200	1-535-143-61	LEAD, JUMPER (5.0MM)	
R1205	1-216-061-00	RES-CHIP	3.3K 5% 1/10W	< TUNER >			
R1206	1-216-073-00	RES-CHIP	10K 5% 1/10W	TU101	8-598-535-00	FRONTEND BTF-EF411 (KV-21LT1B)	
R1207	1-216-083-00	RES-CHIP	27K 5% 1/10W		8-598-531-00	FRONTEND BTF-EC401 (KV-21LT1E)	
R1213	1-216-198-91	RES-CHIP	1K 5% 1/8W		8-598-537-00	FRONTEND BTF-EP401 (KV-21LT1K)	
< RELAY >					8-598-527-00	FRONTEND BTF-EU601 (KV-21LT1U)	
RY601	$\Delta$ 1-755-388-11	RELAY (AC POWER)		<b>A Board Variant Parts KV-21FT2K</b>			
< SWITCH >				< CAPACITOR >			
S001	1-571-532-21	SWITCH, TACTIL		C1203	1-535-143-61	LEAD, JUMPER (5.0MM)	
S002	1-571-532-21	SWITCH, TACTIL		C1208	1-126-953-11	ELECT 2200UF	20.00% 35V
S003	1-571-532-21	SWITCH, TACTIL		< CONNECTOR >			
S004	1-571-532-21	SWITCH, TACTIL		CN1201	1-504-507-11	PLUG, CONNECTOR 4P	
S005	1-571-532-21	SWITCH, TACTIL		< COIL >			
S006	1-571-532-21	SWITCH, TACTIL		L603	1-535-143-61	LEAD, JUMPER (5.0MM)	
S601	$\Delta$ 1-571-433-21	SWITCH, PUSH (AC POWER)		< TUNER >			
SW532	1-572-707-11	SWITCH, LEVER		TU101	8-598-537-00	FRONTEND BTF-EP401	
< TRANSFORMER >				<b>*A-1639-004-A C Board, Complete</b>			
T511	$\Delta$ 1-453-345-11	TRANSFORMER ASSY, FLYBACK (NX1748//M3A4)		< CAPACITOR >			
T531	1-437-210-11	TRANSFORMER, HORIZONTAL DRIVE		C701	1-126-934-11	ELECT 220UF	20.00% 16V
T601	$\Delta$ 1-435-487-11	TRANSFORMER, LINE FILTER		C702	1-102-110-00	CERAMIC 220PF	10.00% 50V
T602	1-431-732-31	TRANSFORMER, CONVERTER (SRT)		C703	1-102-110-00	CERAMIC 220PF	10.00% 50V
T603	$\Delta$ 1-435-525-11	TRANSFORMER, CONVERTER (PIT)		C704	1-101-004-00	CERAMIC 0.01UF	50V
< THERMISTOR >				C705	1-101-004-00	CERAMIC 0.01UF	50V
TH601	1-803-586-11	THERMISTOR, NTC		C708	1-162-114-00	CERAMIC 0.0047UF	2KV
THP601	$\Delta$ 1-803-951-11	THERMISTOR, PTC		C710	1-107-957-11	ELECT 1UF	20.00% 250V
< VARISTOR >				C712	1-102-110-00	CERAMIC 220PF	10.00% 50V
VDR601	$\Delta$ 1-803-830-11	VARISTOR (ERZV14D621)		< CAPACITOR >			
< CRYSTAL >				C701	1-126-934-11	ELECT 220UF	20.00% 16V
X001	1-578-774-11	VIBRATOR, CRYSTAL		C702	1-102-110-00	CERAMIC 220PF	10.00% 50V
				C703	1-102-110-00	CERAMIC 220PF	10.00% 50V
				C704	1-101-004-00	CERAMIC 0.01UF	50V
				C705	1-101-004-00	CERAMIC 0.01UF	50V
				C708	1-162-114-00	CERAMIC 0.0047UF	2KV
				C710	1-107-957-11	ELECT 1UF	20.00% 250V
				C712	1-102-110-00	CERAMIC 220PF	10.00% 50V



REF. NO.	PART.NO	DESCRIPTION	REMARK	REF. NO.	PART.NO	DESCRIPTION	REMARK
C713	1-101-004-00	CERAMIC	0.01UF 50V			< IC >	
C714	1-104-665-11	ELECT	100UF 20.00% 16V	IC1801	8-759-603-37	IC M5216P	
C717	1-102-114-00	CERAMIC	470PF 10.00% 50V				
C718	1-102-114-00	CERAMIC	470PF 10.00% 50V				
C719	1-102-114-00	CERAMIC	470PF 10.00% 50V				
C1803	1-101-005-00	CERAMIC	0.022UF 50V	J701	△ 1-251-595-11	SOCKET, CRT	
C1804	1-126-964-11	ELECT	10UF 20.00% 50V				
C1805	1-137-366-11	MYLAR	0.0022UF 5.00% 50V			< COIL >	
		< CONNECTOR >		L704	1-414-183-41	INDUCTOR 10UH	
CN702	1-695-915-11	TAB (CONTACT)				< TRANSISTOR >	
CN703	*1-564-509-11	PLUG, CONNECTOR 6P					
CN706	1-695-915-11	TAB (CONTACT)		Q701	8-729-046-28	TRANSISTOR BF420-126	
CN707	*1-564-508-11	PLUG, CONNECTOR 5P		Q702	8-729-119-78	TRANSISTOR 2SC1740S-RT	
CN1705	*1-564-506-11	PLUG, CONNECTOR 3P		Q703	8-729-046-28	TRANSISTOR BF420-126	
				Q704	8-729-200-17	TRANSISTOR BF421-AMMO	
CN1801	*1-564-506-11	PLUG, CONNECTOR 3P		Q705	8-729-119-78	TRANSISTOR 2SC1740S-RT	
		< DIODE >		Q706	8-729-046-28	TRANSISTOR BF420-126	
D701	8-719-109-93	DIODE MTZJ-T-77-6.2B		Q707	8-729-200-17	TRANSISTOR BF421-AMMO	
D702	8-719-991-33	DIODE 1SS133T-77		Q708	8-729-119-78	TRANSISTOR 2SC1740S-RT	
D703	1-535-143-61	LEAD, JUMPER (5.0MM)		Q709	8-729-046-28	TRANSISTOR BF420-126	
D704	1-535-143-61	LEAD, JUMPER (5.0MM)		Q710	8-729-200-17	TRANSISTOR BF421-AMMO	
D705	1-535-143-61	LEAD, JUMPER (5.0MM)		Q712	8-729-046-28	TRANSISTOR BF420-126	
D706	8-719-991-33	DIODE 1SS133T-77		Q713	8-729-046-28	TRANSISTOR BF420-126	
D707	8-719-991-33	DIODE 1SS133T-77		Q715	8-729-200-17	TRANSISTOR BF421-AMMO	
D708	8-719-991-33	DIODE 1SS133T-77		Q716	8-729-200-17	TRANSISTOR BF421-AMMO	
D709	8-719-991-33	DIODE 1SS133T-77		Q717	8-729-200-17	TRANSISTOR BF421-AMMO	
D710	8-719-991-33	DIODE 1SS133T-77		Q718	8-729-119-78	TRANSISTOR 2SC1740S-RT	
D712	8-719-991-33	DIODE 1SS133T-77				< RESISTOR >	
D713	8-719-950-57	DIODE BYD33G-AMMO		R701	1-247-895-91	CARBON 470K 5% 1/4W	
D714	8-719-991-33	DIODE 1SS133T-77		R702	1-215-900-11	METAL OXIDE 22K 5% 2W	
D715	8-719-991-33	DIODE 1SS133T-77		R703	1-249-405-11	CARBON 100 5% 1/4W	
D716	8-719-991-33	DIODE 1SS133T-77		R704	1-249-401-11	CARBON 47 5% 1/4W	
D717	8-719-991-33	DIODE 1SS133T-77		R705	1-215-871-11	METAL OXIDE 2.2K 5% 1W	
D718	8-719-991-33	DIODE 1SS133T-77		R706	1-249-409-11	CARBON 220 5% 1/4W	
D719	8-719-991-33	DIODE 1SS133T-77		R707	1-249-414-11	CARBON 560 5% 1/4W	
D720	8-719-110-41	DIODE MTZJ-T-77-15B		R708	1-247-807-31	CARBON 100 5% 1/4W	
D721	8-719-991-33	DIODE 1SS133T-77		R709	1-249-429-11	CARBON 10K 5% 1/4W	
D722	8-719-991-33	DIODE 1SS133T-77		R711	1-249-421-11	CARBON 2.2K 5% 1/4W	
D723	8-719-991-33	DIODE 1SS133T-77					
D724	8-719-991-33	DIODE 1SS133T-77		R712	1-215-871-11	METAL OXIDE 2.2K 5% 1W	
D725	8-719-991-33	DIODE 1SS133T-77		R714	1-215-900-11	METAL OXIDE 22K 5% 2W	
D726	8-719-991-33	DIODE 1SS133T-77		R715	1-249-405-11	CARBON 100 5% 1/4W	
D1801	8-719-110-17	DIODE MTZJ-T-77-10		R716	1-249-409-11	CARBON 220 5% 1/4W	
D1802	8-719-110-17	DIODE MTZJ-T-77-10		R717	1-249-414-11	CARBON 560 5% 1/4W	
D1803	8-719-110-17	DIODE MTZJ-T-77-10		R718	1-202-814-11	SOLID 33K 10% 1/2W	
				R719	1-247-807-31	CARBON 100 5% 1/4W	



The components identified by shading and marked  $\Delta$  are critical for safety  
Replace only with the part number specified.

C

REF. NO.	PART.NO	DESCRIPTION	REMARK	REF. NO.	PART.NO	DESCRIPTION	REMARK
R720	1-249-421-11	CARBON	2.2K 5% 1/4W	<b>MISCELLANEOUS</b>			
R721	1-249-405-11	CARBON	100 5% 1/4W	$\Delta$ 1-419-187-11	COIL DEGAUSSING		
R722	1-249-393-11	CARBON	10 5% 1/4W	1-452-032-00	MAGNET, DISK; 10MM		
R723	1-249-393-11	CARBON	10 5% 1/4W	1-452-094-00	MAGNET, ROTATABLE DISK; 15MM		
R724	1-249-393-11	CARBON	10 5% 1/4W	$\Delta$ 1-453-345-11	TRANSFORMER ASSY, FLYBACK (NX-1748//M3A4)		
				1-452-728-61	COIL, NA ROTATION (RT-154)		
R726	1-215-871-11	METAL OXIDE	2.2K 5% 1W	1-529-711-11	SPEAKER (8CM) (KV-21LT1)		
R727	1-249-409-11	CARBON	220 5% 1/4W	1-529-710-11	SPEAKER (5x9CM) (KV-21FT2)		
R728	1-216-372-11	METAL OXIDE	1.8 5% 2W	$\Delta$ 1-571-433-21	SWITCH, PUSH (AC POWER)		
R729	1-249-414-11	CARBON	560 5% 1/4W	$\Delta$ 1-765-286-11	CORD, POWER (KV-21LT1B/21LT1E/21LT1K/21FT2K)		
R730	1-247-807-31	CARBON	100 5% 1/4W	$\Delta$ 1-776-860-11	POWER CORD, FILTER (KV-21LT1U)		
R731	1-249-421-11	CARBON	2.2K 5% 1/4W	$\Delta$ 8-738-836-05	PICTURE TUBE (A51LPT60X) (SD-313)		
R734	1-247-807-31	CARBON	100 5% 1/4W	$\Delta$ 8-451-505-11	DEFLECTION YOKE (Y21RSA-S)		
R736	1-215-900-11	METAL OXIDE	22K 5% 2W	$\Delta$ 1-251-839-21	CAP ASSY, HIGH VOLTAGE		
R741	1-202-549-00	SOLID	100 20% 1/2W	8-598-535-00	FRONTEND BTF-EF411 (KV-21LT1B)		
R1801	1-249-441-11	CARBON	100K 5% 1/4W	8-598-531-00	FRONTEND BTF-EC401 (KV-21LT1E)		
R1805	1-249-429-11	CARBON	10K 5% 1/4W	8-598-537-00	FRONTEND BTF-EP401 (KV-21LT1K/KV-21FT2K)		
R1806	1-247-899-11	CARBON	680K 5% 1/4W	8-598-527-00	FRONTEND BTF-EU601 (KV-21LT1U)		
R1807	1-249-429-11	CARBON	10K 5% 1/4W	<b>ACCESSORIES AND PACKAGING MATERIALS</b>			
R1808	1-249-429-11	CARBON	10K 5% 1/4W	*4-205-481-21	MANUAL, INSTRUCTION (KV-21LT1B)		
R1809	1-249-429-11	CARBON	10K 5% 1/4W		(GERMAN/FRENCH/ITALIAN/DUTCH)		
R1810	1-249-429-11	CARBON	10K 5% 1/4W	*4-205-481-71	MANUAL, INSTRUCTION (KV-21LT1B)		
< VARIABLE RESISTOR >					(ENGLISH)		
RV702	1-241-656-21	RES, ADJ, METAL FILM 110M		*4-205-481-11	MANUAL, INSTRUCTION (KV-21LT1E)		
<b>REMOTE COMMANDER</b>					(GERMAN/GREEK/TURKISH)		
	1-418-476-21	REMOTE COMMANDER (RM-887)		*4-205-481-51	MANUAL, INSTRUCTION (KV-21LT1E)		
					(SPANISH/PORTUGUESE/FINNISH/SWEDISH/DANISH/NORWEGIAN)		
				*4-205-481-61	MANUAL, INSTRUCTION (KV-21LT1E)		
					(ITALIAN)		
				*4-205-481-41	MANUAL, INSTRUCTION (KV-21LT1K)		
					(BELGIAN/CZECH/ENGLISH/DUTCH/POLISH/RUSSIAN/SLOVAKIAN)		
				*4-205-481-31	MANUAL, INSTRUCTION (KV-21LT1U)		
					(ENGLISH)		
				*4-205-400-41	MANUAL, INSTRUCTION (KV-21FT2K)		
					(BELGIAN/CZECH/ENGLISH/DUTCH/POLISH/RUSSIAN/SLOVAKIAN)		
				*4-395-957-01	BAG, PROTECTION		
				*4-205-642-01	INDIVIDUAL CARTON (KV-21LT1)		
				*4-205-407-01	INDIVIDUAL CARTON (KV-21FT2)		
				*4-205-675-01	CUSHION (UPPER) (ASSY) (KV-21LT1)		
				*4-205-404-01	CUSHION (UPPER) (ASSY) (KV-21FT2)		
				*4-205-674-01	CUSHION (LOWER) (ASSY) (KV-21LT1)		
				*4-205-401-01	CUSHION (LOWER) (ASSY) (KV-21FT2)		